Company: Itron

Test of: RIVA Modular LE

To: FCC CFR 47 Part 15 Subpart C 15.247
ISED RSS-247

Report No.: ITRO09-U2_Radiated Rev A

RADIATED TEST REPORT

RADIATED TEST REPORT

FROM

Test of: Itron RIVA Modular LE

To: FCC CFR 47 Part 15 Subpart C 15.247
ISED RSS-247

Test Report Serial No.: ITRO09-U2_Radiated Rev A

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Applicant: Itron
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1. TEST RESULTS

1.1. Emissions

1.1.1. Radiated Emissions

Radiated Test Conditions for Radiated Spurious and Band-Edge Emissions (Restricted Bands)			
Standard:	FCC CFR 47:15.247 ISED RSS 247	**Ambient Temp. (ºC):**	20.0 - 24.5
Test Heading:	Radiated Spurious and Band-Edge Emissions	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.205, 15.209 RSS-247 5.5	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Radiated Spurious and Band-Edge Emissions (Restricted Bands)

Radiated emissions for restricted bands above 1 GHz are measured in the anechoic chamber at a 3-meter distance on every azimuth in both horizontal and vertical polarities. The emissions are recorded and maximized as a function of azimuth by rotation through 360° with a spectrum analyzer in peak hold mode. Depending on the frequency band spanned a notch filter and waveguide filter was used to remove the fundamental frequency. The highest emissions relative to the limit are listed for each frequency spanned. Measurements on any restricted band frequency or frequencies above 1 GHz are based on the use of measurement instrumentation employing peak and average detectors. All measurements were performed using a resolution bandwidth of 1 MHz.

Test configuration and setup for Radiated Spurious and Band-Edge Measurement were per the Radiated Test Set-up specified in this document.

Limits for Restricted Bands
Peak emission: 74 dBuV/m
Average emission: 54 dBuV/m

Field Strength Calculation
The field strength is calculated by adding the Antenna Factor and Cable Loss, and subtracting Amplifier Gain from the measured reading. All factors are included in the reported data.
FS = R + AF + CORR - FO

where:
FS = Field Strength
R = Measured Spectrum analyzer Input Amplitude
AF = Antenna Factor
CORR = Correction Factor = CL – AG + NFL
CL = Cable Loss
AG = Amplifier Gain
FO = Distance Falloff Factor
NFL = Notch Filter Loss or Waveguide Loss

Example:
Given receiver input reading of 51.5 dBmV; Antenna Factor of 8.5 dB; Cable Loss of 1.3 dB; Falloff Factor of 0 dB, an Amplifier Gain of 26 dB and Notch Filter Loss of 1 dB. The Field Strength (FS) of the measured emission is:

FS = 51.5 + 8.5 + 1.3 - 26.0 +1 = 36.3 dBmV/m

Conversion between dBmV/m (or dBmV) and mV/m (or mV) are as follows:
Level (dBmV/m) = 20 * Log (level (mV/m))

40 dBmV/m = 100 mV/m
48 dBmV/m = 250 mV/m
Restricted Bands of Operation (15.205)

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

Frequency Band			
MHz	**MHz**	**MHz**	**GHz**
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

(b) Except as provided in paragraphs (d) and (e) of this section, the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

(c) Except as provided in paragraphs (d) and (e) of this section, regardless of the field strength limits specified elsewhere in this subpart, the provisions of this section apply to emissions from any intentional radiator.

(d) The following devices are exempt from the requirements of this section:

(1) Swept frequency field disturbance sensors operating between 1.705 and 37 MHz provided their emissions only sweep through the bands listed in paragraph (a) of this section, the sweep is never stopped with the fundamental emission within the bands listed in paragraph (a) of this section, and the fundamental emission is outside of the bands listed in paragraph (a) of this section more than 99% of the time the device is actively transmitting, without compensation for duty cycle.

(2) Transmitters used to detect buried electronic markers at 101.4 kHz which are employed by telephone companies.

(3) Cable locating equipment operated pursuant to §15.213.

(4) Any equipment operated under the provisions of §15.253, 15.255, and 15.256 in the frequency band 75-85 GHz, or §15.257 of this part.

(5) Biomedical telemetry devices operating under the provisions of §15.242 of this part are not subject to the restricted band 608-614 MHz but are subject to compliance within the other restricted bands.

(6) Transmitters operating under the provisions of subparts D or F of this part.

(7) Devices operated pursuant to §15.225 are exempt from complying with this section for the 13.36-13.41 MHz band only.

(8) Devices operated in the 24.075-24.175 GHz band under §15.245 are exempt from complying with the requirements of this section for the 48.15-48.35 GHz and 72.225-72.525 GHz bands only, and shall not exceed the limits specified in §15.245(b).

(9) Devices operated in the 24.0-24.25 GHz band under §15.249 are exempt from complying with the requirements of this section for the 48.0-48.5 GHz and 72.0-72.75 GHz bands only, and shall not exceed the limits specified in §15.249(a).

(e) Harmonic emissions appearing in the restricted bands above 17.7 GHz from field disturbance sensors operating under the provisions of §15.245 shall not exceed the limits specified in §15.245(b).

1.1.1.1. TX Spurious & Restricted Band Emissions

Equipment Configuration for Radiated Digital Emissions			
Antenna:	Laird 0600-00048	**Variant:**	Mode 1
Antenna Gain (dBi):	2.0	**Modulation:**	GFSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	902.20	**Data Rate:**	10 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	902.19	46.96	6.65	-5.10	48.51	Fundamental	Vertical	100	0	--	--	
Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload												

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	Laird 0600-00048	**Variant:**	Mode 1
Antenna Gain (dBi):	2.0	**Modulation:**	GFSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	902.20	**Data Rate:**	10 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	1804.43	63.36	-1.55	-14.44	47.37	Peak (NRB)	Vertical	100	0	--	--	Pass
Test Notes: Laird 2 dBi Monopole Antenna												

Equipment Configuration for Radiated Digital Emissions

Antenna:	Laird 0600-00048	**Variant:**	Mode 1
Antenna Gain (dBi):	2.0	**Modulation:**	GFSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	915.20	**Data Rate:**	10 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	915.10	48.04	6.67	-4.70	50.01	Fundamental	Vertical	101	0	--	--	
Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload												

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	Laird 0600-00048	**Variant:**	Mode 1
Antenna Gain (dBi):	2.0	**Modulation:**	GFSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	915.20	**Data Rate:**	10 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	1830.15	62.87	-1.52	-14.03	47.32	Peak (NRB)	Vertical	100	0	--	--	Pass
Test Notes: Laird 0600-00048 2 dBi Monopole Antenna												

Equipment Configuration for Radiated Digital Emissions

Antenna:	Laird 0600-00048	**Variant:**	Mode 1
Antenna Gain (dBi):	2.0	**Modulation:**	GFSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	927.75	**Data Rate:**	10 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	927.67	61.53	6.72	-4.70	63.55	Fundamental	Vertical	100	0	--	--	
#2	953.75	40.27	6.82	-4.30	42.79	Peak (NRB)	Vertical	100	0	--	--	Pass
Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload												

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	Laird 0600-00048	**Variant:**	Mode 1
Antenna Gain (dBi):	2.0	**Modulation:**	GFSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	927.75	**Data Rate:**	10 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	1855.46	60.81	-1.56	-13.80	45.45	Peak (NRB)	Vertical	100	0	--	--	Pass
Test Notes: Laird 0600-00048 2 dBi Monopole Antenna												

Equipment Configuration for Radiated Digital Emissions

Antenna:	Laird 0600-00048	**Variant:**	Mode 1
Antenna Gain (dBi):	2.0	**Modulation:**	GFSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	Hop	**Data Rate:**	10 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	54.34	46.49	3.73	-21.30	28.92	MaxQP	Vertical	134	104	40.0	-11.1	Pass
#2	861.00	46.23	6.54	-5.40	47.37	Peak (NRB)	Vertical	100	0	--	--	Pass
#3	869.48	40.27	6.58	-5.30	41.55	Peak (NRB)	Horizontal	100	0	--	--	Pass
#4	880.18	42.42	6.59	-5.20	43.81	Peak (NRB)	Vertical	100	0	--	--	Pass
#5	902.24	47.06	6.65	-5.10	48.61	Fundamental	Vertical	100	0	--	--	Pass
#6	926.49	61.56	6.72	-4.60	63.68	Fundamental	Vertical	100	0	--	--	Pass
#7	939.73	51.36	6.77	-4.30	53.83	Peak (NRB)	Vertical	100	0	--	--	Pass
#8	951.82	40.37	6.81	-4.30	42.88	Peak (NRB)	Vertical	100	0	--	--	Pass
#9	968.48	24.05	6.85	-4.20	26.70	MaxQP	Vertical	138	352	53.0	-26.3	Pass
Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload, Hopping												

Equipment Configuration for Radiated Digital Emissions

Antenna:	Laird 0600-00048	**Variant:**	Mode 2
Antenna Gain (dBi):	2.0	**Modulation:**	FSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	902.20	**Data Rate:**	50 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	902.13	46.94	6.65	-5.10	48.49	Peak (NRB)	Vertical	100	0	--	--	Pass
Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload												

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	Laird 0600-00048	**Variant:**	Mode 2
Antenna Gain (dBi):	2.0	**Modulation:**	FSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	902.20	**Data Rate:**	50 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	1804.53	64.18	-1.55	-14.44	48.19	Peak (NRB)	Vertical	100	0	--	--	Pass
Test Notes: Laird 0600-00048 2 dBi Monopole Antenna												

Equipment Configuration for Radiated Digital Emissions

Antenna:	Laird 0600-00048	**Variant:**	Mode 2
Antenna Gain (dBi):	2.0	**Modulation:**	FSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	915.20	**Data Rate:**	50 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	915.15	47.53	6.68	-4.80	49.41	Fundamental	Vertical	100	0	--	--	Pass
Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload												

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	Laird 0600-00048	**Variant:**	Mode 2
Antenna Gain (dBi):	2.0	**Modulation:**	FSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	915.20	**Data Rate:**	50 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	1830.27	62.96	-1.52	-14.03	47.41	Peak (NRB)	Vertical	100	0	--	--	Pass
Test Notes: Laird 0600-00048 2 dBi Monopole Antenna												

Equipment Configuration for Radiated Digital Emissions

Antenna:	Laird 0600-00048	**Variant:**	Mode 2
Antenna Gain (dBi):	2.0	**Modulation:**	FSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	927.60	**Data Rate:**	50 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	927.48	61.76	6.72	-4.70	63.78	Fundamental	Vertical	100	0	--	--	Pass
#2	953.64	40.41	6.82	-4.30	42.93	Peak (NRB)	Vertical	100	0	--	--	Pass
Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload												

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	Laird 0600-00048	**Variant:**	Mode 2
Antenna Gain (dBi):	2.0	**Modulation:**	FSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	927.60	**Data Rate:**	50 Kbit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	1855.21	63.69	-1.56	-13.80	48.33	Peak (NRB)	Vertical	149	0	--	--	Pass
Test Notes: Laird 0600-00048 2 dBi Monopole Antenna												

Equipment Configuration for Radiated Digital Emissions

Antenna:	Laird 0600-00048	**Variant:**	Mode 2
Antenna Gain (dBi):	2.0	**Modulation:**	FSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	Hop	**Data Rate:**	50 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	55.74	47.09	3.73	-21.30	29.52	MaxQP	Vertical	134	104	40.0	-10.5	Pass
#2	867.57	48.95	6.56	-5.30	50.21	Peak (NRB)	Vertical	100	98	--	--	Pass
#3	902.51	43.84	6.65	-5.10	45.39	Fundamental	Vertical	100	98	--	--	
#4	927.42	72.26	6.72	-4.70	74.28	Fundamental	Vertical	100	98	--	--	Pass
#5	959.57	54.17	6.81	-4.10	56.88	Peak (NRB)	Vertical	100	0	--	--	Pass
#6	972.79	22.83	6.88	-4.10	25.61	MaxQP	Vertical	184	346	53.0	-27.4	Pass
Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload, Hopping												

Equipment Configuration for Radiated Digital Emissions

Antenna:	Laird 0600-00048	**Variant:**	Mode 3
Antenna Gain (dBi):	2.0	**Modulation:**	OOK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	903.00	**Data Rate:**	16.384 Bit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	875.59	44.61	6.59	-5.20	46.00	Peak (NRB)	Vertical	100	0	--	--	Pass
#2	902.99	45.48	6.65	-5.10	47.03	Fundamental	Horizontal	100	0	--	--	Pass
#3	947.52	40.13	6.79	-4.20	42.72	Peak (NRB)	Vertical	100	0	--	--	Pass
Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload												

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	Laird 0600-00048	**Variant:**	Mode 3
Antenna Gain (dBi):	2.0	**Modulation:**	OOK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	903.00	**Data Rate:**	16.384 Bit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

1000.00 - 10000.00 MHz

Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	1806.01	65.34	-1.55	-14.43	49.36	Peak (NRB)	Vertical	149	0	--	--	Pass

Test Notes: Laird 0600-00048 2 dBi Monopole Antenna

Equipment Configuration for Radiated Digital Emissions

Antenna:	Laird 0600-00048	**Variant:**	Mode 3
Antenna Gain (dBi):	2.0	**Modulation:**	OOK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	915.20	**Data Rate:**	16.384 Bit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	874.21	44.43	6.58	-5.20	45.81	Peak (NRB)	Vertical	100	0	--	--	Pass
#2	915.19	47.52	6.68	-4.80	49.40	Fundamental	Vertical	100	0	--	--	Pass
#3	945.74	48.81	6.77	-4.20	51.38	Peak (NRB)	Vertical	100	0	--	--	Pass
#4	960.64	42.47	6.82	-4.30	44.99	MaxQP	Vertical	98	50	53.0	-8.0	Pass
Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload												

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	Laird 0600-00048	**Variant:**	Mode 3
Antenna Gain (dBi):	2.0	**Modulation:**	OOK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	915.20	**Data Rate:**	16.384 Bit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	1830.38	62.48	-1.52	-14.03	46.93	Peak (NRB)	Vertical	100	0	--	--	Pass
Test Notes: Laird 0600-00048 2 dBi Monopole Antenna												

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	Laird 0600-00048	**Variant:**	Mode 3
Antenna Gain (dBi):	2.0	**Modulation:**	OOK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	926.80	**Data Rate:**	16.384 Bit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	1853.65	63.28	-1.56	-13.81	47.91	Peak (NRB)	Vertical	143	0	--	--	Pass
Test Notes: Laird 0600-00048 2 dBi Monopole Antenna												

Equipment Configuration for Radiated Digital Emissions

Antenna:	Laird 0600-00048	**Variant:**	Mode 3
Antenna Gain (dBi):	2.0	**Modulation:**	OOK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	Hop	**Data Rate:**	16.384 Bit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	51.59	46.57	3.70	-20.70	29.57	MaxQP	Vertical	175	328	40.0	-10.4	Pass
#2	868.08	57.11	6.56	-5.30	58.37	Peak (NRB)	Vertical	100	0	--	--	Pass
#3	874.85	45.44	6.58	-5.20	46.82	Peak (NRB)	Vertical	100	0	--	--	Pass
#4	903.56	45.65	6.67	-4.90	47.42	Fundamental	Vertical	100	0	--	--	Pass
#5	926.60	73.89	6.72	-4.60	76.01	Fundamental	Vertical	100	0	--	--	Pass
#6	946.33	55.42	6.78	-4.20	58.00	Peak (NRB)	Vertical	100	0	--	--	Pass
#7	960.44	41.57	6.82	-4.30	44.09	MaxQP	Vertical	147	301	46.0	-1.9	Pass
Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload, Hopping												

Equipment Configuration for Radiated Digital Emissions

Antenna:	World Products WPANT30088-S1A	**Variant:**	Mode 1
Antenna Gain (dBi):	2.50	**Modulation:**	GFSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	902.20	**Data Rate:**	10 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	902.20	43.44	6.65	-5.10	44.99	Fundamental	Horizontal	100	0	--	--	
Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads.												

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	World Products WPANT30088-S1A	**Variant:**	Mode 1
Antenna Gain (dBi):	2.50	**Modulation:**	GFSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	902.20	**Data Rate:**	10 KBit/s
Power Setting:		**Tested By:**	JMH

Test Measurement Results

1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	1804.41	74.81	-1.55	-14.44	58.82	Peak (NRB)	Horizontal	100	0	--	--	Pass

Equipment Configuration for Radiated Digital Emissions

Antenna:	World Products WPANT30088-S1A	**Variant:**	Mode 1
Antenna Gain (dBi):	2.50	**Modulation:**	GFSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	915.20	**Data Rate:**	10 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	915.10	44.40	6.68	-4.80	46.28	Peak (NRB)	Horizontal	100	0	--	--	Pass
Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads.												

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	World Products WPANT30088-S1A	**Variant:**	Mode 1
Antenna Gain (dBi):	2.50	**Modulation:**	GFSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	915.20	**Data Rate:**	10 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	1830.22	72.71	-1.52	-14.03	57.16	Peak (NRB)	Horizontal	100	0	--	--	Pass
Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads.												

Equipment Configuration for Radiated Digital Emissions

Antenna:	World Products WPANT30088-S1A	**Variant:**	Mode 1
Antenna Gain (dBi):	2.50	**Modulation:**	GFSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	927.75	**Data Rate:**	10 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	927.76	73.47	6.72	-4.70	75.49	Fundamental	Horizontal	100	0	--	--	Pass
#2	953.76	39.33	6.82	-4.30	41.85	Peak (NRB)	Vertical	100	127	--	--	Pass
Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads.												

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	World Products WPANT30088-S1A	**Variant:**	Mode 1
Antenna Gain (dBi):	2.50	**Modulation:**	GFSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	927.75	**Data Rate:**	10 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	1855.56	70.37	-1.56	-13.80	55.01	Peak (NRB)	Horizontal	100	0	--	--	Pass

Equipment Configuration for Radiated Digital Emissions

Antenna:	World Products WPANT30088-S1A	**Variant:**	Mode 1
Antenna Gain (dBi):	2.5	**Modulation:**	GFSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	Hop	**Data Rate:**	10 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	54.06	49.54	3.73	-21.10	32.17	MaxQP	Vertical	101	312	40.0	-7.8	Pass
#2	864.09	45.81	6.54	-5.20	47.15	Peak (NRB)	Vertical	100	0	--	--	Pass
#3	865.22	48.93	6.54	-5.20	50.27	Peak (NRB)	Horizontal	100	0	--	--	Pass
#4	902.26	42.31	6.65	-5.10	43.86	Fundamental	Horizontal	100	0	--	--	
#5	927.51	71.10	6.72	-4.70	73.12	Fundamental	Horizontal	100	0	--	--	
#6	944.37	48.26	6.77	-4.20	50.83	Peak (NRB)	Horizontal	100	0	--	--	Pass
#7	956.82	42.69	6.79	-4.20	45.28	Peak (NRB)	Horizontal	100	0	--	--	Pass
#8	964.79	22.60	6.82	-4.20	25.22	MaxQP	Vertical	180	308	53.0	-27.8	Pass
#9	973.99	22.66	6.89	-4.00	25.55	MaxQP	Vertical	215	357	53.0	-27.5	Pass
#10	976.26	24.81	6.87	-4.00	27.68	MaxQP	Horizontal	105	160	53.0	-25.3	Pass
Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads. Hopping												

Equipment Configuration for Radiated Digital Emissions

Antenna:	World Products WPANT30088-S1A	**Variant:**	Mode 2
Antenna Gain (dBi):	2.50	**Modulation:**	FSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	902.20	**Data Rate:**	50 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	902.31	42.68	6.65	-5.10	44.23	Fundamental	Horizontal	100	0	--	--	
Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads.												

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	World Products WPANT30088-S1A	**Variant:**	Mode 2
Antenna Gain (dBi):	2.50	**Modulation:**	FSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	902.20	**Data Rate:**	50 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	1804.44	74.75	-1.55	-14.44	58.76	Peak (NRB)	Horizontal	100	0	--	--	Pass
Test Notes: WPANT Antenna..												

Equipment Configuration for Radiated Digital Emissions

Antenna:	World Products WPANT30088-S1A	**Variant:**	Mode 2
Antenna Gain (dBi):	2.50	**Modulation:**	FSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	915.20	**Data Rate:**	50 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	915.15	43.95	6.68	-4.80	45.83	Fundamental	Horizontal	101	0	--	--	Pass
Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads.												

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	World Products WPANT30088-S1A	**Variant:**	Mode 2
Antenna Gain (dBi):	2.50	**Modulation:**	FSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	915.20	**Data Rate:**	50 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

1000.00 - 10000.00 MHz

Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	1830.31	71.93	-1.52	-14.03	56.38	Peak (NRB)	Horizontal	100	0	--	--	Pass

Test Notes: WPANT Antenna..

Equipment Configuration for Radiated Digital Emissions

Antenna:	World Products WPANT30088-S1A	**Variant:**	Mode 2
Antenna Gain (dBi):	Not Applicable	**Modulation:**	FSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	927.60	**Data Rate:**	50 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	927.69	74.07	6.72	-4.70	76.09	Fundamental	Horizontal	100	0	--	--	Pass
#2	953.57	39.28	6.82	-4.30	41.80	Peak (NRB)	Horizontal	100	0	--	--	Pass
Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads.												

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	World Products WPANT30088-S1A	**Variant:**	Mode 2
Antenna Gain (dBi):	2.50	**Modulation:**	FSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	927.60	**Data Rate:**	50 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

1000.00 - 10000.00 MHz

Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	1855.11	69.73	-1.56	-13.80	54.37	Peak (NRB)	Horizontal	100	0	--	--	Pass

Test Notes: WPANT Antenna..

Equipment Configuration for Radiated Digital Emissions

Antenna:	World Products WPANT30088-S1A	**Variant:**	Mode 2
Antenna Gain (dBi):	2.50	**Modulation:**	FSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	Hop	**Data Rate:**	50 KBit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	54.29	48.87	3.73	-21.10	31.50	MaxQP	Vertical	125	268	40.0	-8.5	Pass
#2	821.16	52.93	6.89	-5.50	40.54	Peak (NRB)	Horizontal	100	0	--	--	Pass
#3	850.32	59.61	7.02	-5.50	47.09	Peak (NRB)	Horizontal	100	0	--	--	Pass
#4	860.04	63.79	7.11	-5.40	51.28	Peak (NRB)	Horizontal	100	0	--	--	Pass
#5	873.65	61.84	7.15	-5.30	49.48	Peak (NRB)	Horizontal	100	0	--	--	Pass
#6	902.07	42.13	6.65	-5.10	43.68	Peak (NRB)	Horizontal	100	0	--	--	Pass
#7	926.98	70.84	6.72	-4.60	72.96	Peak (NRB)	Horizontal	100	0	--	--	Pass
#8	947.40	46.49	6.79	-4.20	49.08	Peak (NRB)	Horizontal	100	0	--	--	Pass
#9	949.39	47.42	6.79	-4.20	50.01	Peak (NRB)	Horizontal	100	0	--	--	Pass
#10	955.57	48.12	6.79	-4.20	50.71	Peak (NRB)	Horizontal	100	0	--	--	Pass
#11	968.57	22.76	6.85	-4.20	25.41	MaxQP	Horizontal	224	66	53.0	-27.6	Pass
#12	971.22	23.11	6.85	-4.00	25.96	MaxQP	Horizontal	171	149	53.0	-27.0	Pass
#13	973.53	23.49	6.89	-4.00	26.38	MaxQP	Horizontal	184	144	53.0	-26.6	Pass
Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads.												

Equipment Configuration for Radiated Digital Emissions

Antenna:	World Products WPANT30088-S1A	**Variant:**	Mode 3
Antenna Gain (dBi):	Not Applicable	**Modulation:**	OOK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	903.00	**Data Rate:**	16384 Bit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	866.99	43.18	6.54	-5.30	44.42	Peak (NRB)	Horizontal	100	41	--	--	Pass
#2	902.99	40.91	6.65	-5.10	42.46	Fundamental	Horizontal	100	0	--	--	
#3	946.47	44.52	6.78	-4.20	47.10	Peak (NRB)	Horizontal	100	132	--	--	Pass
Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads.												

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	World Products WPANT30088-S1A	**Variant:**	Mode 3
Antenna Gain (dBi):	2.50	**Modulation:**	OOK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	903.00	**Data Rate:**	16384 Bit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	1806.04	76.69	-1.55	-14.43	60.71	Peak (NRB)	Horizontal	100	0	--	--	Pass

Equipment Configuration for Radiated Digital Emissions

Antenna:	World Products WPANT30088-S1A	**Variant:**	Mode 3
Antenna Gain (dBi):	Not Applicable	**Modulation:**	OOK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	915.20	**Data Rate:**	16384 Bit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	873.53	42.08	6.58	-5.30	43.36	Peak (NRB)	Horizontal	100	166	--	--	Pass
#2	915.21	44.13	6.68	-4.80	46.01	Fundamental	Horizontal	100	0	--	--	Pass
#3	947.52	50.38	6.79	-4.20	52.97	Peak (NRB)	Horizontal	100	166	--	--	Pass
#4	960.19	41.09	6.82	-4.30	43.61	MaxQP	Horizontal	98	150	53.0	-9.4	Pass
Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads.												

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	World Products WPANT30088-S1A	**Variant:**	Mode 3
Antenna Gain (dBi):	2.50	**Modulation:**	OOK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	915.20	**Data Rate:**	16384 Bit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	1830.42	73.62	-1.52	-14.03	58.07	Peak (NRB)	Horizontal	100	0	--	--	Pass
Test Notes: WPANT Antenna..												

Equipment Configuration for Radiated Digital Emissions

Antenna:	World Products WPANT30088-S1A	**Variant:**	Mode 3
Antenna Gain (dBi):	Not Applicable	**Modulation:**	OOK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	926.80	**Data Rate:**	16384 Bit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	867.82	35.99	6.56	-5.30	37.25	Peak (NRB)	Horizontal	100	0	--	--	Pass
#2	926.81	71.47	6.72	-4.60	73.59	Fundamental	Horizontal	100	0	--	--	Pass
#3	944.78	45.79	6.77	-4.20	48.36	Peak (NRB)	Horizontal	100	0	--	--	Pass
#4	957.56	46.21	6.79	-4.10	48.90	Peak (NRB)	Horizontal	100	0	--	--	Pass
#5	960.21	48.50	6.82	-4.30	51.02	MaxQP	Horizontal	100	143	53.0	-3.0	Pass
#6	963.07	48.50	6.81	-4.20	51.11	MaxQP	Horizontal	100	149	53.0	-1.9	Pass

Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads.

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	World Products WPANT30088-S1A	**Variant:**	Mode 3
Antenna Gain (dBi):	2.50	**Modulation:**	OOK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	926.80	**Data Rate:**	16384 Bit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

1000.00 - 10000.00 MHz

Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	1853.63	71.71	-1.56	-13.81	56.34	Peak (NRB)	Horizontal	100	0	--	--	Pass

Equipment Configuration for Radiated Digital Emissions

Antenna:	World Products WPANT30088-S1A	**Variant:**	Mode 3
Antenna Gain (dBi):	2.5	**Modulation:**	OOK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	Hop	**Data Rate:**	16384 Bit/s
Power Setting:	340	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	54.32	51.54	3.73	-21.10	34.17	MaxQP	Vertical	100	348	40.0	-5.8	Pass
#2	866.66	47.42	6.54	-5.30	48.66	Peak (NRB)	Vertical	201	360	--	--	Pass
#3	903.73	39.75	6.67	-4.90	41.52	Fundamental	Horizontal	100	0	--	--	Pass
#4	926.82	67.25	6.72	-4.60	69.37	Fundamental	Horizontal	100	0	--	--	Pass
#5	948.41	49.72	6.79	-4.20	52.31	Peak (NRB)	Horizontal	100	166	--	--	Pass
#6	953.37	50.49	6.82	-4.30	53.01	Peak (NRB)	Horizontal	100	166	--	--	Pass
#7	958.77	49.07	6.80	-4.30	51.57	Peak (NRB)	Horizontal	100	166	--	--	Pass
#8	960.54	39.12	6.82	-4.30	41.64	MaxQP	Horizontal	189	165	53.0	-11.4	Pass
#9	961.75	39.08	6.82	-4.00	41.90	MaxQP	Horizontal	301	154	53.0	-11.1	Pass
#10	962.52	34.07	6.81	-4.10	36.78	MaxQP	Horizontal	101	128	53.0	-16.2	Pass

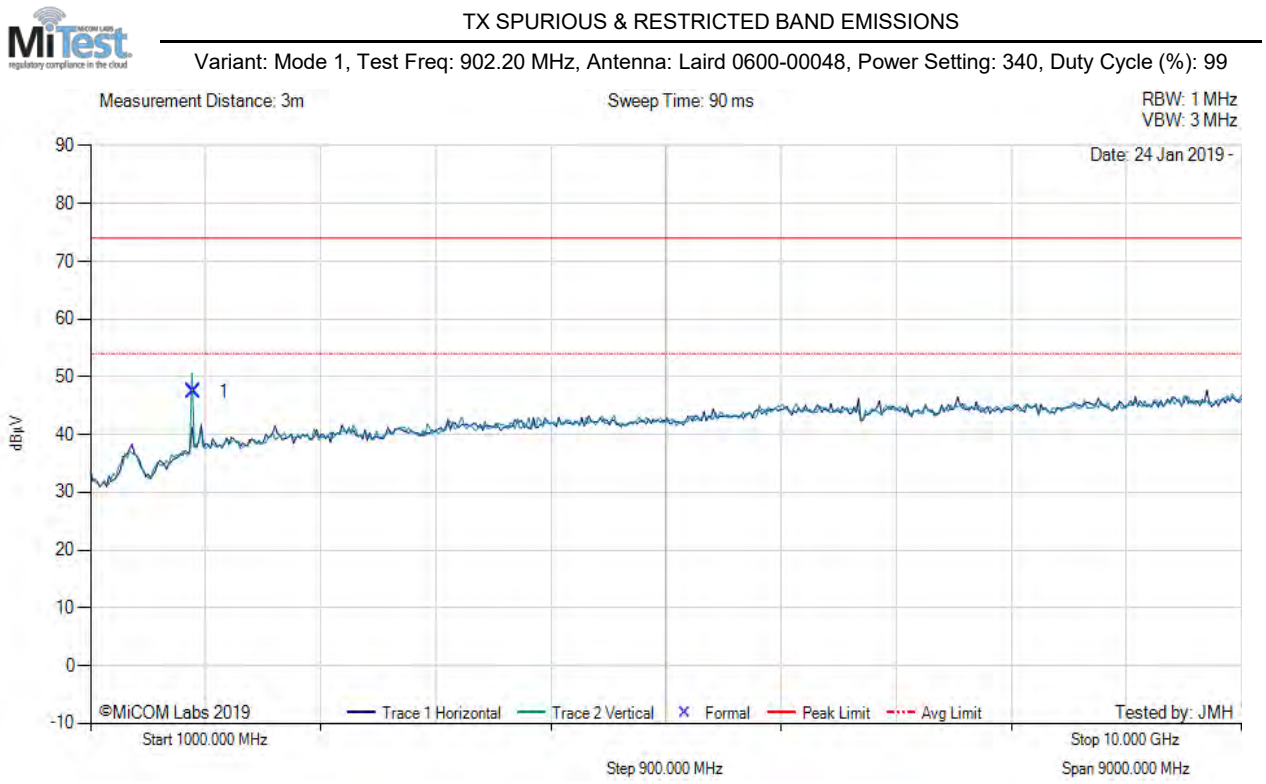
Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads. Hopping

A. APPENDIX - GRAPHICAL IMAGES

A.1. Emissions

A.1.1. Radiated Emissions

A.1.1.1. TX Spurious & Restricted Band Emissions

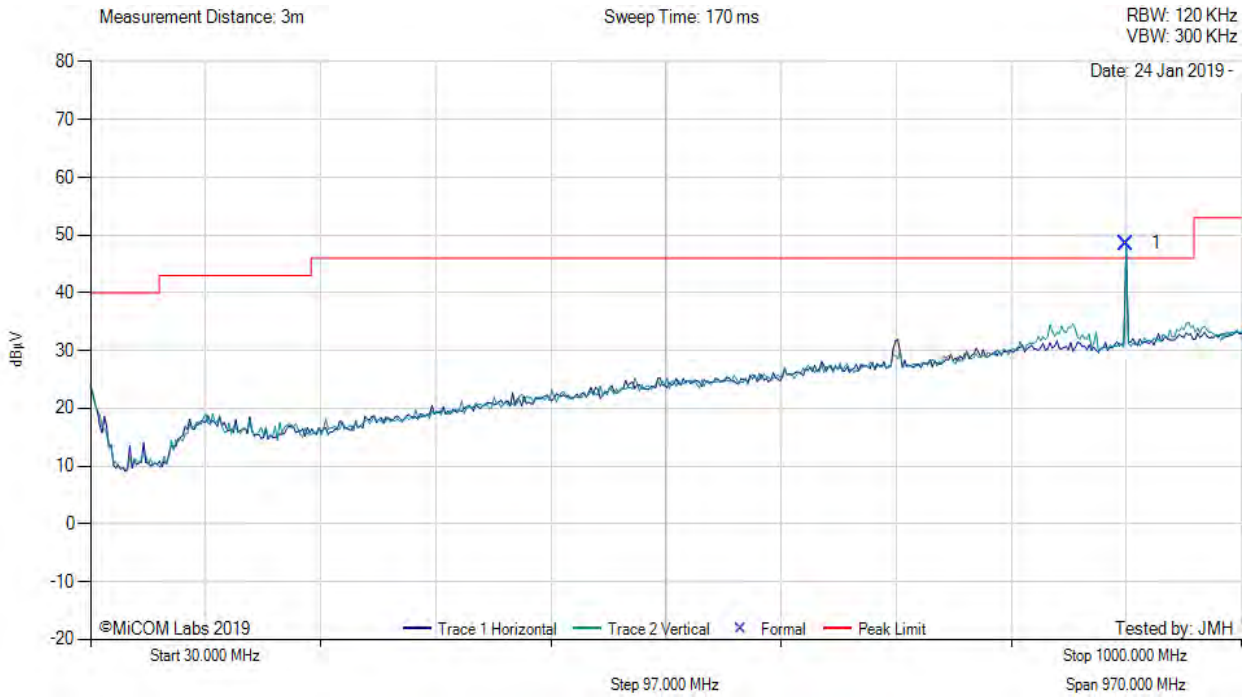


1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	1804.43	63.36	-1.55	-14.44	47.37	Peak (NRB)	Vertical	100	0	--	--	Pass
Test Notes: Laird 2 dBi Monopole Antenna												

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 1, Test Freq: 902.20 MHz, Antenna: Laird 0600-00048, Power Setting: 340, Duty Cycle (%): 99



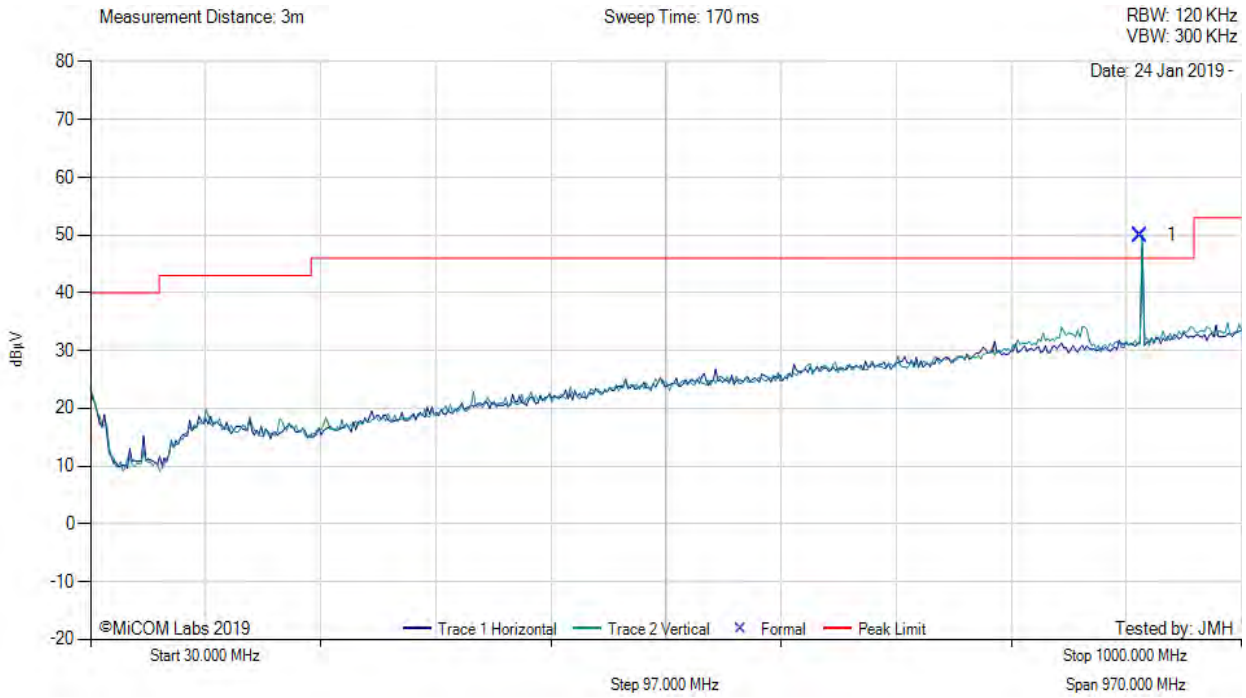
30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	902.19	46.96	6.65	-5.10	48.51	Fundamental	Vertical	100	0	--	--	

Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 1, Test Freq: 915.20 MHz, Antenna: Laird 0600-00048, Power Setting: 340, Duty Cycle (%): 99



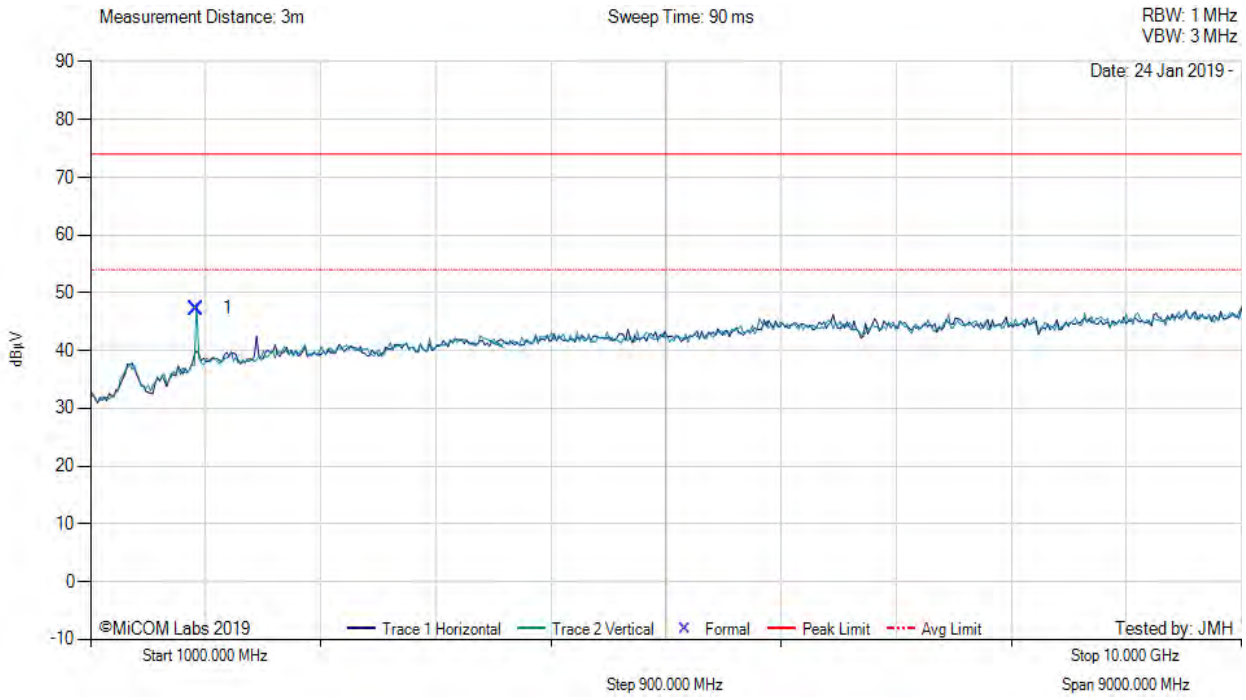
30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	915.10	48.04	6.67	-4.70	50.01	Fundamental	Vertical	101	0	--	--	

Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 1, Test Freq: 915.20 MHz, Antenna: Laird 0600-00048, Power Setting: 340, Duty Cycle (%): 99



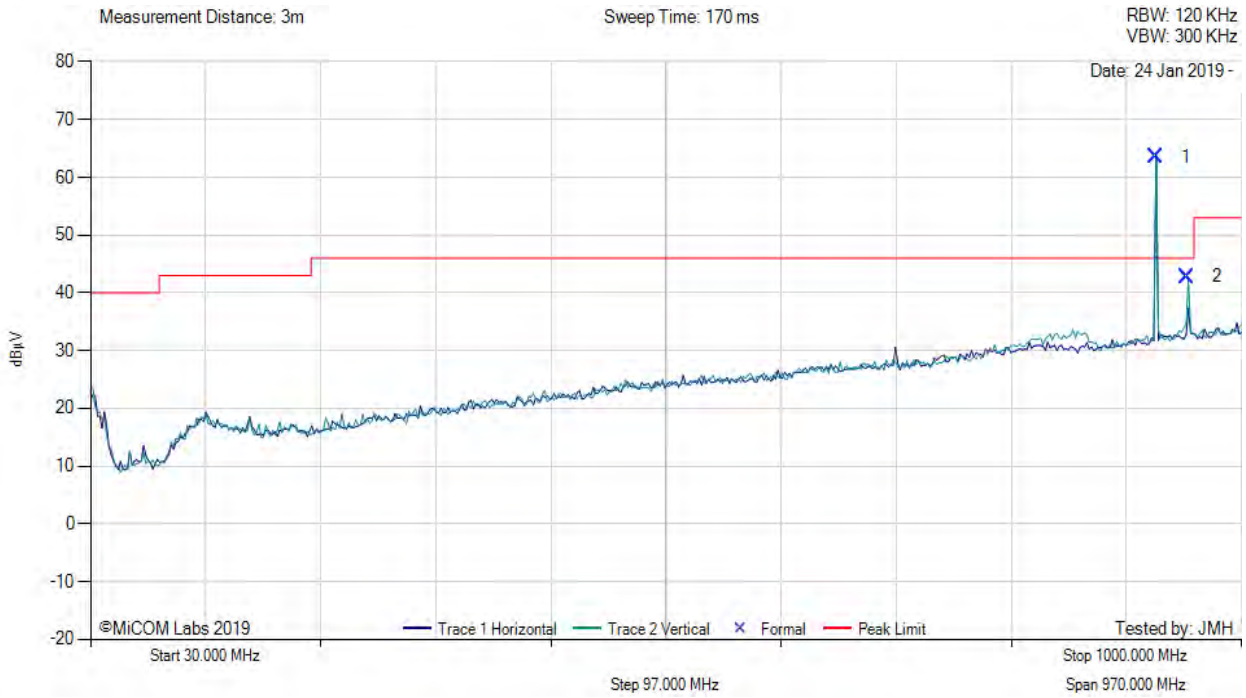
1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	1830.15	62.87	-1.52	-14.03	47.32	Peak (NRB)	Vertical	100	0	--	--	Pass

Test Notes: Laird 0600-00048 2 dBi Monopole Antenna

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 1, Test Freq: 926.80 MHz, Antenna: Laird 0600-00048, Power Setting: 340, Duty Cycle (%): 99



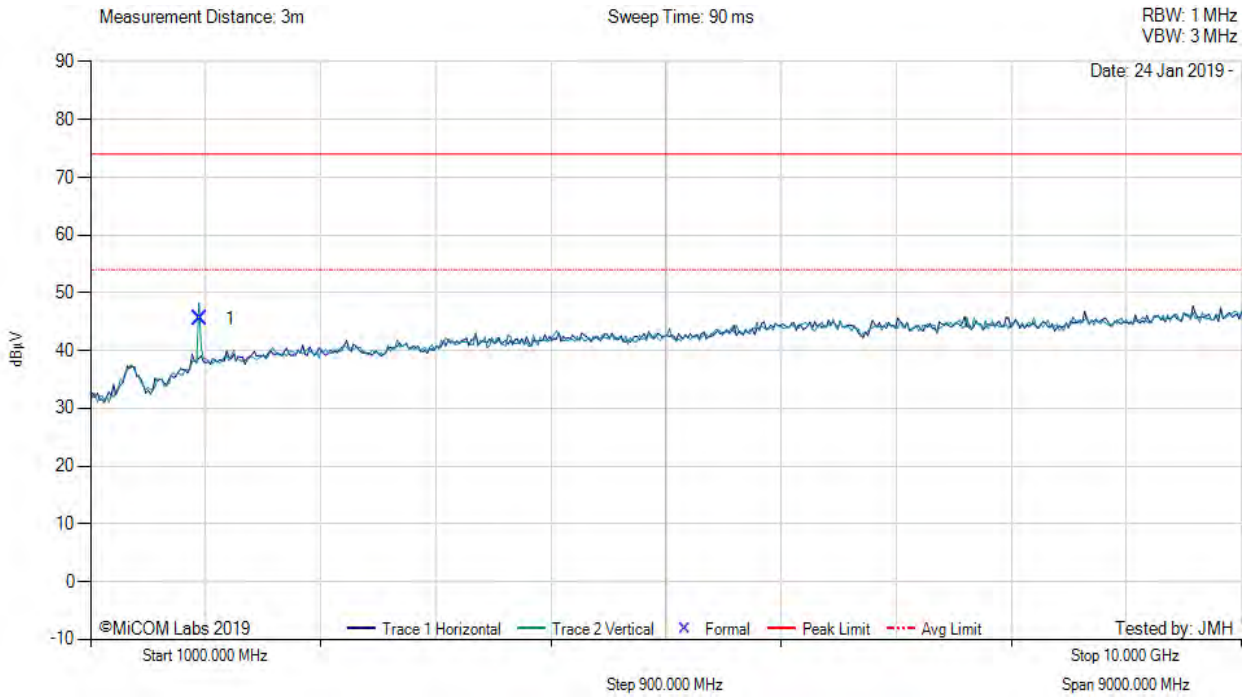
30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	927.67	61.53	6.72	-4.70	63.55	Fundamental	Vertical	100	0	--	--	
2	953.75	40.27	6.82	-4.30	42.79	Peak (NRB)	Vertical	100	0	--	--	Pass

Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 1, Test Freq: 927.75 MHz, Antenna: Laird 0600-00048, Power Setting: 340, Duty Cycle (%): 99



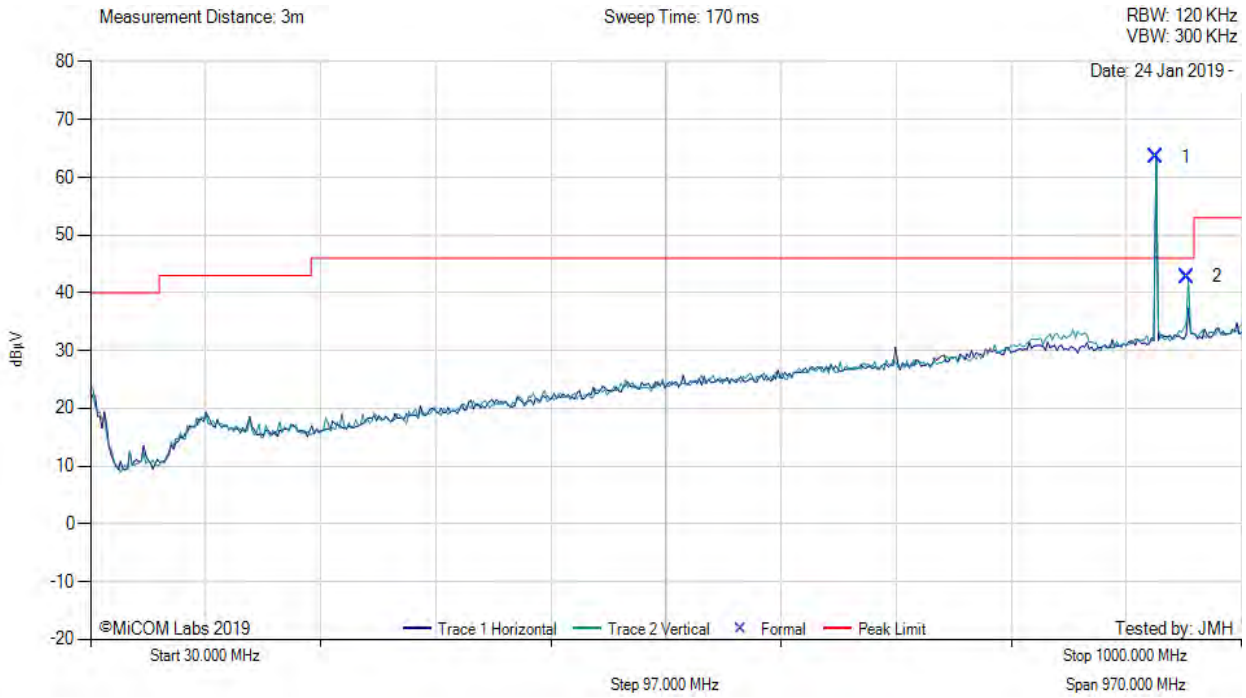
1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	1855.46	60.81	-1.56	-13.80	45.45	Peak (NRB)	Vertical	100	0	--	--	Pass

Test Notes: Laird 0600-00048 2 dBi Monopole Antenna

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 1, Test Freq: 927.75 MHz, Antenna: Laird 0600-00048, Power Setting: 340, Duty Cycle (%): 99



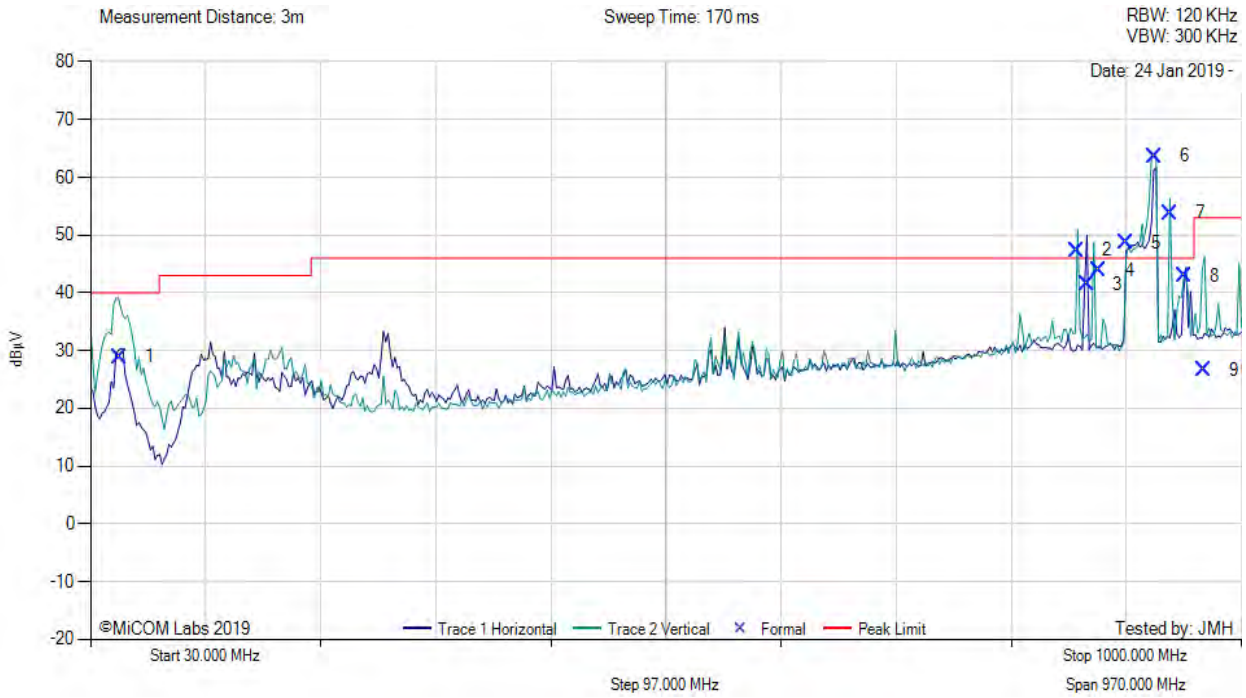
30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	927.67	61.53	6.72	-4.70	63.55	Fundamental	Vertical	100	0	--	--	
2	953.75	40.27	6.82	-4.30	42.79	Peak (NRB)	Vertical	100	0	--	--	Pass

Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 1, Test Freq: Hop, Antenna: Laird 0600-00048, Power Setting: 340, Duty Cycle (%): 99



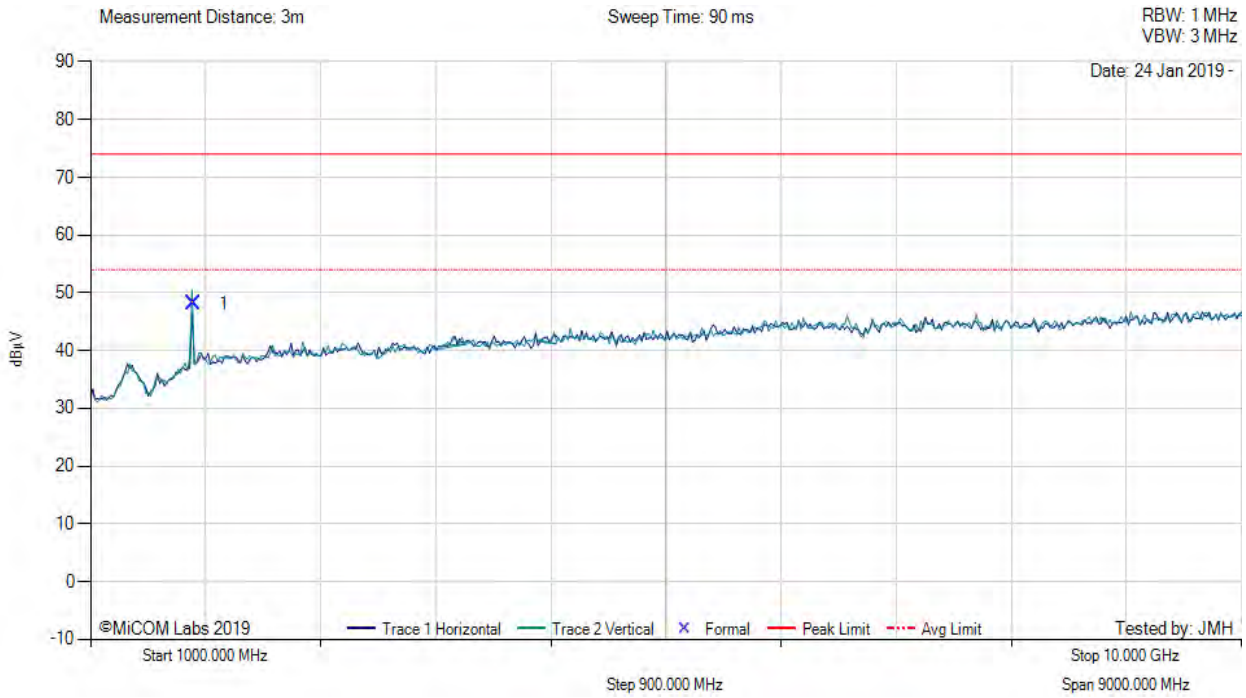
30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	54.34	46.49	3.73	-21.30	28.92	MaxQP	Vertical	134	104	40.0	-11.1	Pass
2	861.00	46.23	6.54	-5.40	47.37	Peak (NRB)	Vertical	100	0	--	--	Pass
3	869.48	40.27	6.58	-5.30	41.55	Peak (NRB)	Horizontal	100	0	--	--	Pass
4	880.18	42.42	6.59	-5.20	43.81	Peak (NRB)	Vertical	100	0	--	--	Pass
5	902.24	47.06	6.65	-5.10	48.61	Fundamental	Vertical	100	0	--	--	Pass
6	926.49	61.56	6.72	-4.60	63.68	Fundamental	Vertical	100	0	--	--	Pass
7	939.73	51.36	6.77	-4.30	53.83	Peak (NRB)	Vertical	100	0	--	--	Pass
8	951.82	40.37	6.81	-4.30	42.88	Peak (NRB)	Vertical	100	0	--	--	Pass
9	968.48	24.05	6.85	-4.20	26.70	MaxQP	Vertical	138	352	53.0	-26.3	Pass

Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload, Hopping

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 2, Test Freq: 902.20 MHz, Antenna: Laird 0600-00048, Power Setting: 340, Duty Cycle (%): 99



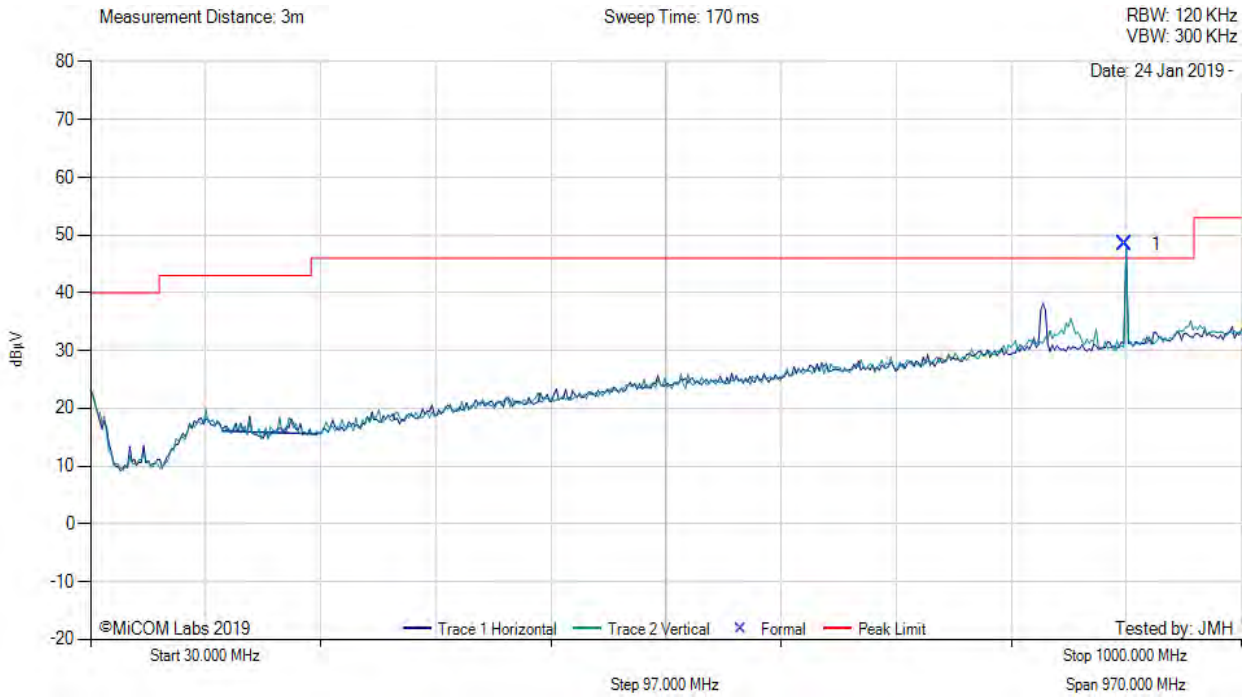
1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	1804.53	64.18	-1.55	-14.44	48.19	Peak (NRB)	Vertical	100	0	--	--	Pass

Test Notes: Laird 0600-00048 2 dBi Monopole Antenna

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 2, Test Freq: 902.20 MHz, Antenna: Laird 0600-00048, Power Setting: 340, Duty Cycle (%): 99



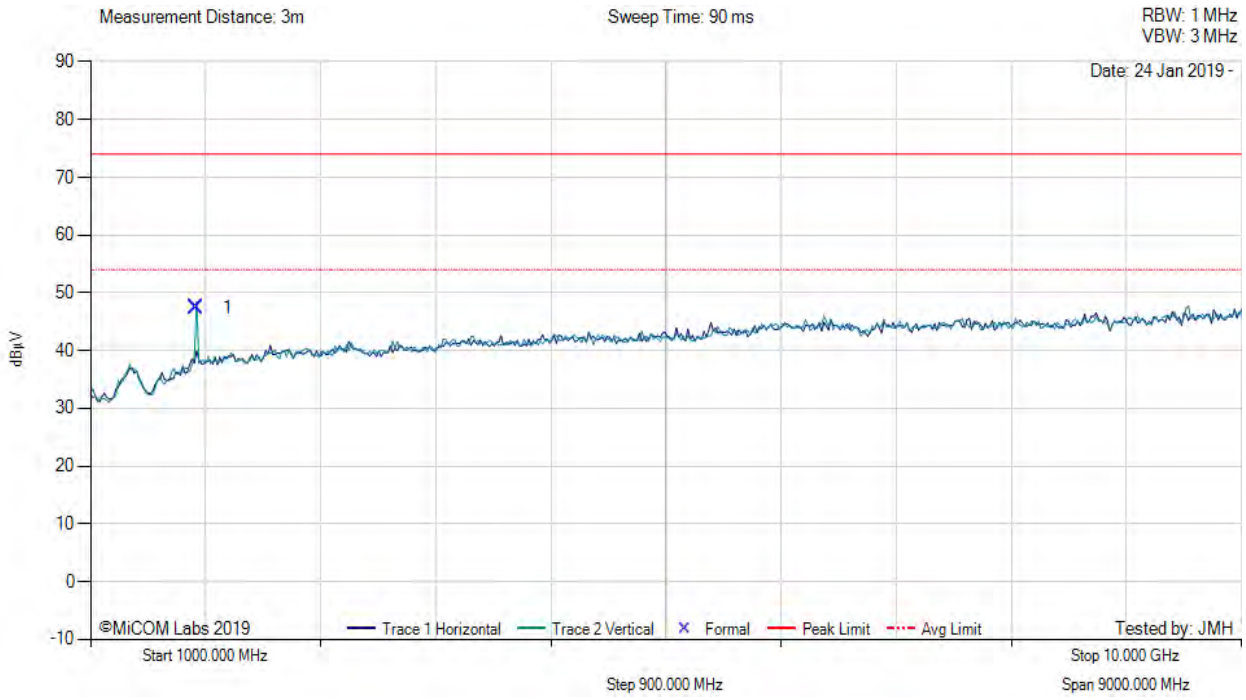
30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	902.13	46.94	6.65	-5.10	48.49	Peak (NRB)	Vertical	100	0	--	--	Pass

Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 2, Test Freq: 915.20 MHz, Antenna: Laird 0600-00048, Power Setting: 340, Duty Cycle (%): 99



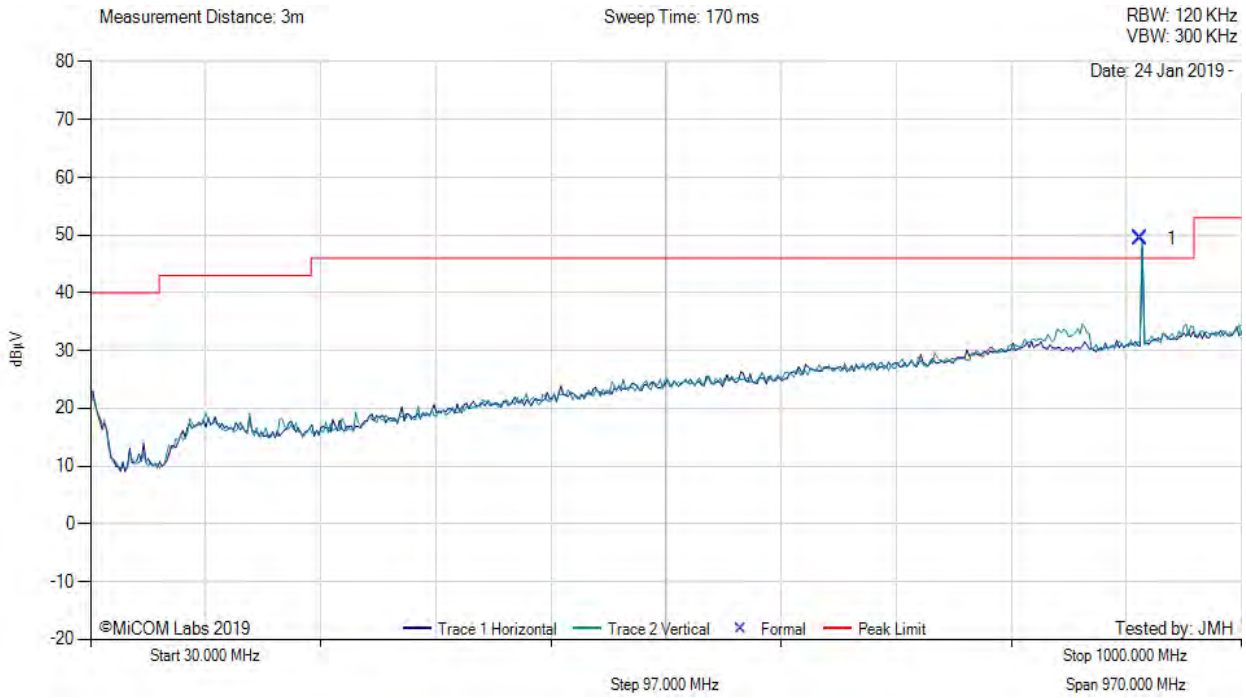
1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	1830.27	62.96	-1.52	-14.03	47.41	Peak (NRB)	Vertical	100	0	--	--	Pass

Test Notes: Laird 0600-00048 2 dBi Monopole Antenna

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 2, Test Freq: 915.20 MHz, Antenna: Laird 0600-00048, Power Setting: 340, Duty Cycle (%): 99



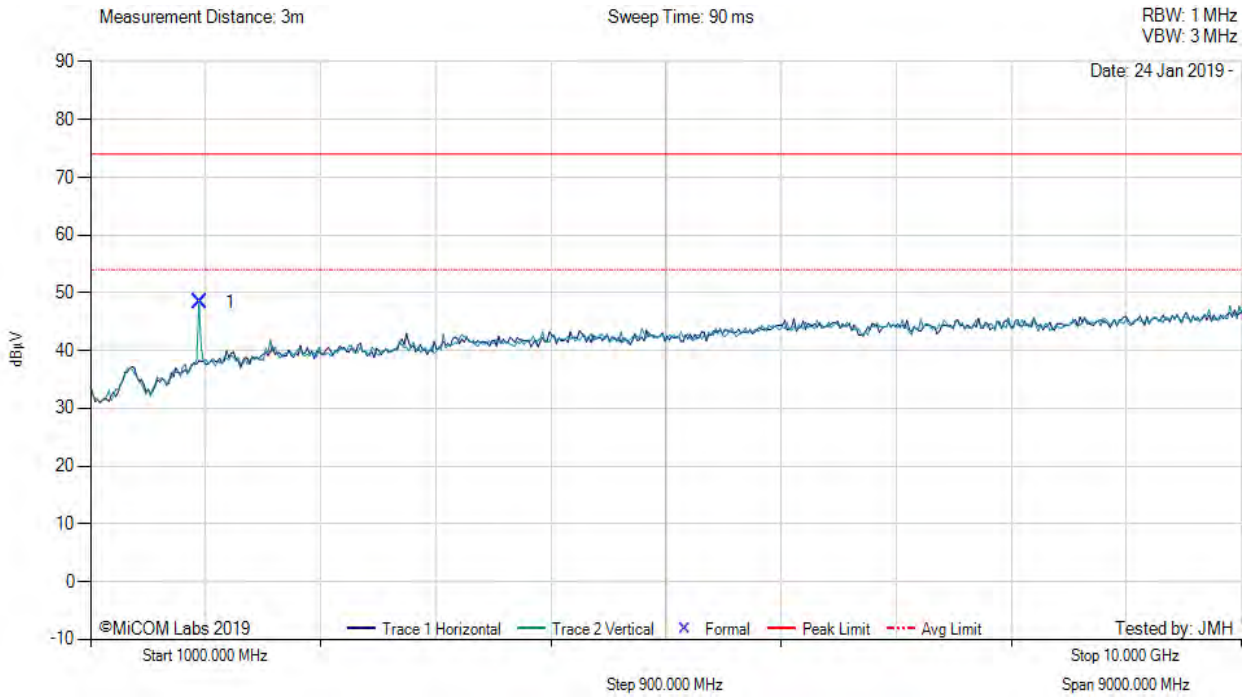
30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	915.15	47.53	6.68	-4.80	49.41	Fundamental	Vertical	100	0	--	--	Pass

Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 2, Test Freq: 927.60 MHz, Antenna: Laird 0600-00048, Power Setting: 340, Duty Cycle (%): 99



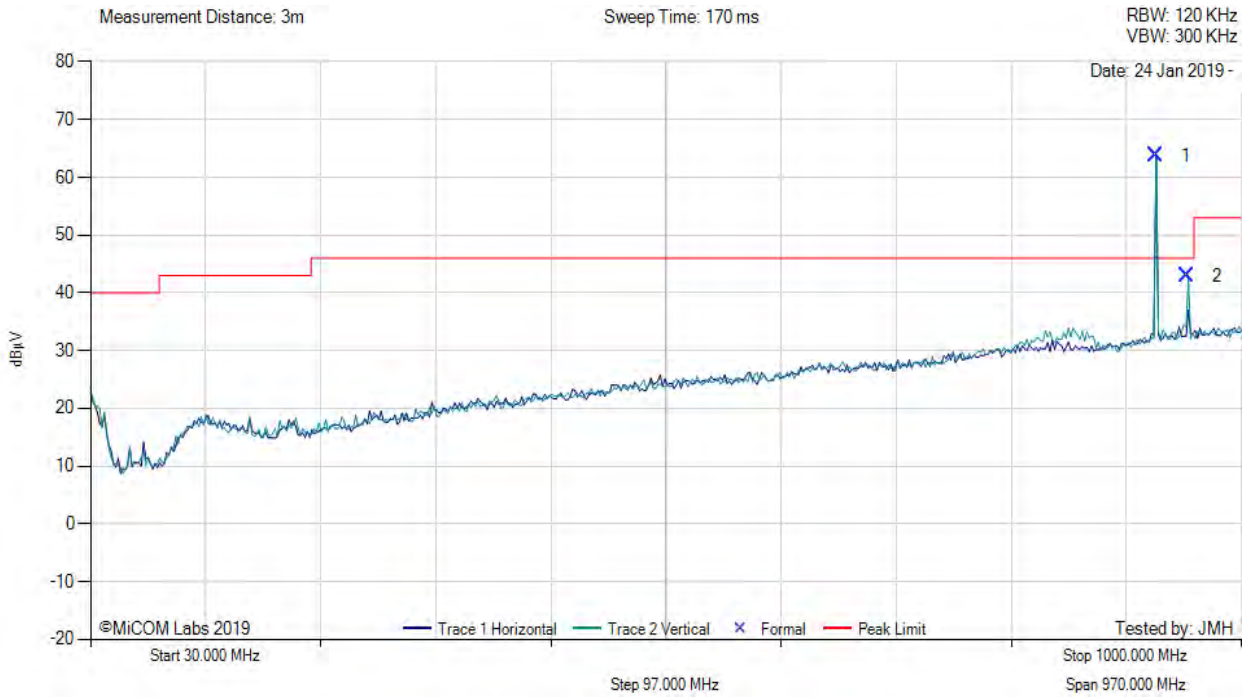
1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	1855.21	63.69	-1.56	-13.80	48.33	Peak (NRB)	Vertical	149	0	--	--	Pass

Test Notes: Laird 0600-00048 2 dBi Monopole Antenna

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 2, Test Freq: 927.60 MHz, Antenna: Laird 0600-00048, Power Setting: 340, Duty Cycle (%): 99



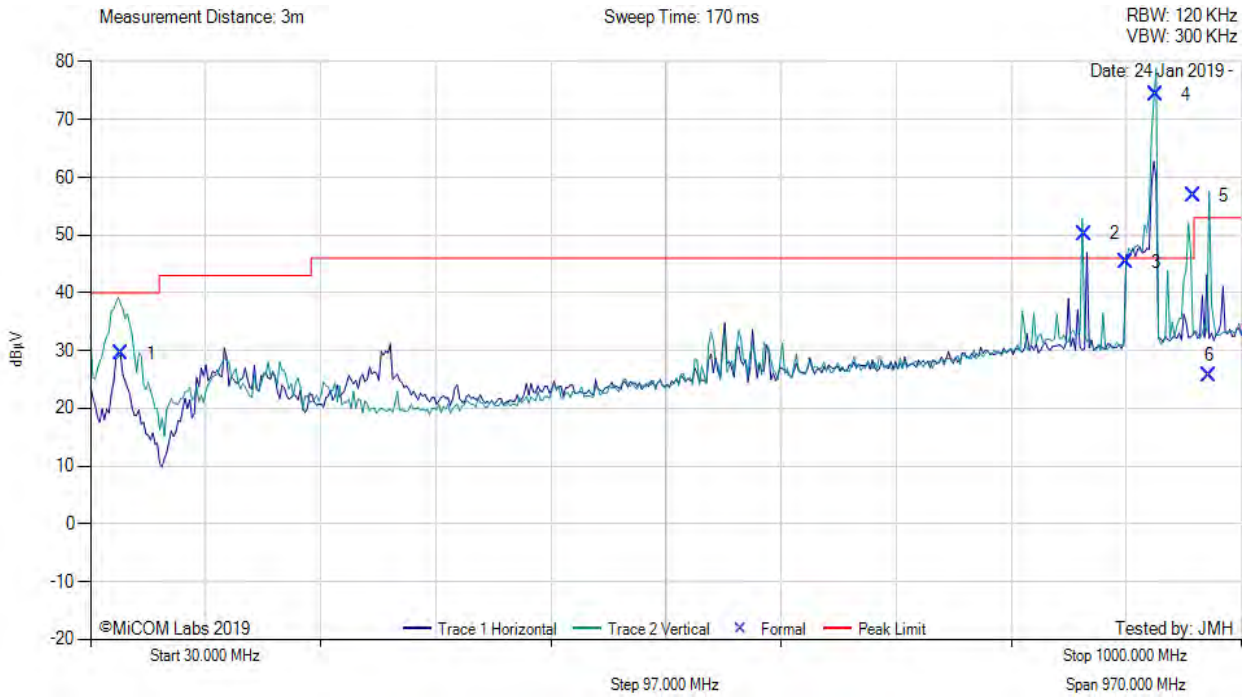
30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	927.48	61.76	6.72	-4.70	63.78	Fundamental	Vertical	100	0	--	--	Pass
2	953.64	40.41	6.82	-4.30	42.93	Peak (NRB)	Vertical	100	0	--	--	Pass

Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 2, Test Freq: Hop, Antenna: Laird 0600-00048, Power Setting: 340, Duty Cycle (%): 99



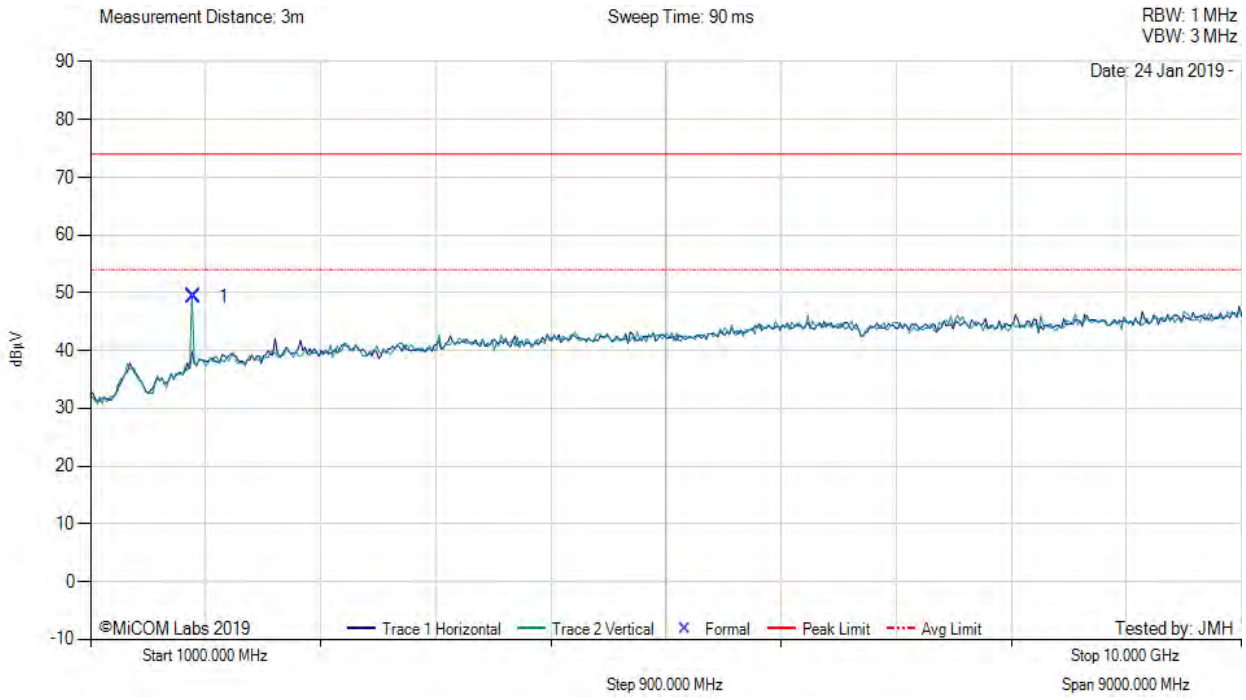
30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	55.74	47.09	3.73	-21.30	29.52	MaxQP	Vertical	134	104	40.0	-10.5	Pass
2	867.57	48.95	6.56	-5.30	50.21	Peak (NRB)	Vertical	100	98	--	--	Pass
3	902.51	43.84	6.65	-5.10	45.39	Fundamental	Vertical	100	98	--	--	
4	927.42	72.26	6.72	-4.70	74.28	Fundamental	Vertical	100	98	--	--	Pass
5	959.57	54.17	6.81	-4.10	56.88	Peak (NRB)	Vertical	100	0	--	--	Pass
6	972.79	22.83	6.88	-4.10	25.61	MaxQP	Vertical	184	346	53.0	-27.4	Pass

Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload, Hopping

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 3, Test Freq: 903.00 MHz, Antenna: Laird 0600-00048, Power Setting: 340, Duty Cycle (%): 99



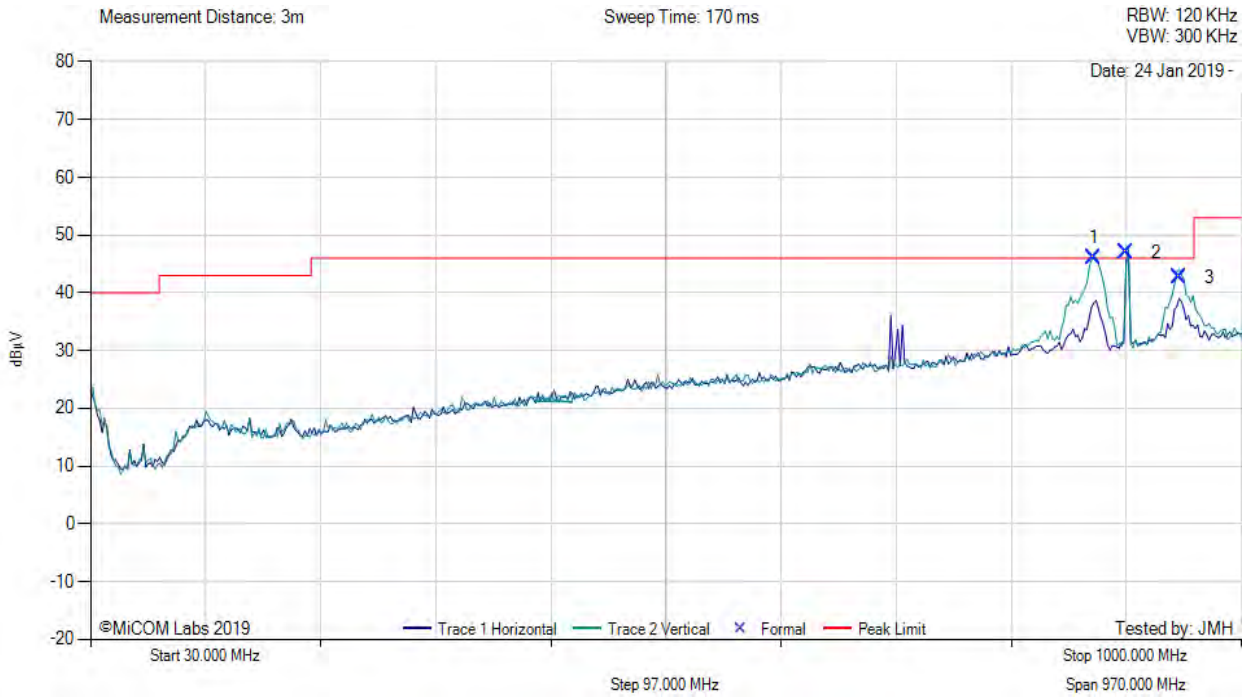
1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	1806.01	65.34	-1.55	-14.43	49.36	Peak (NRB)	Vertical	149	0	--	--	Pass

Test Notes: Laird 0600-00048 2 dBi Monopole Antenna

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 3, Test Freq: 903.00 MHz, Antenna: Laird 0600-00048, Power Setting: 340, Duty Cycle (%): 99



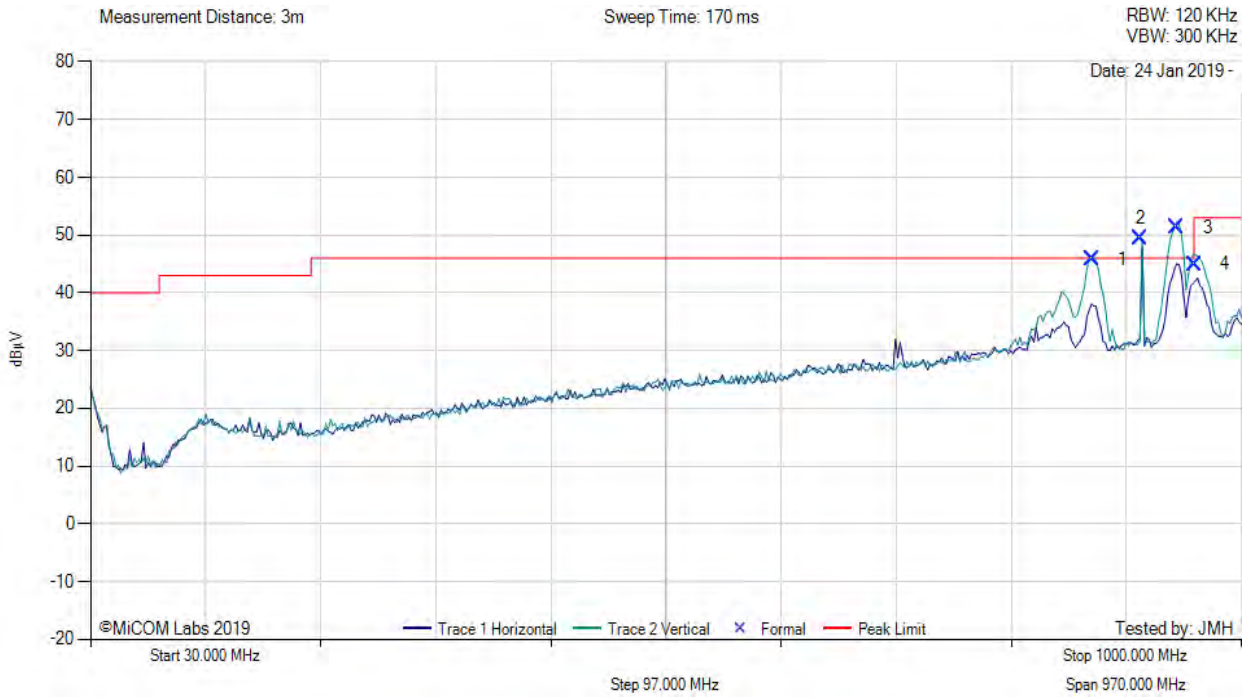
30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	875.59	44.61	6.59	-5.20	46.00	Peak (NRB)	Vertical	100	0	--	--	Pass
2	902.99	45.48	6.65	-5.10	47.03	Fundamental	Horizontal	100	0	--	--	Pass
3	947.52	40.13	6.79	-4.20	42.72	Peak (NRB)	Vertical	100	0	--	--	Pass

Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 3, Test Freq: 915.20 MHz, Antenna: Laird 0600-00048, Power Setting: 340, Duty Cycle (%): 99



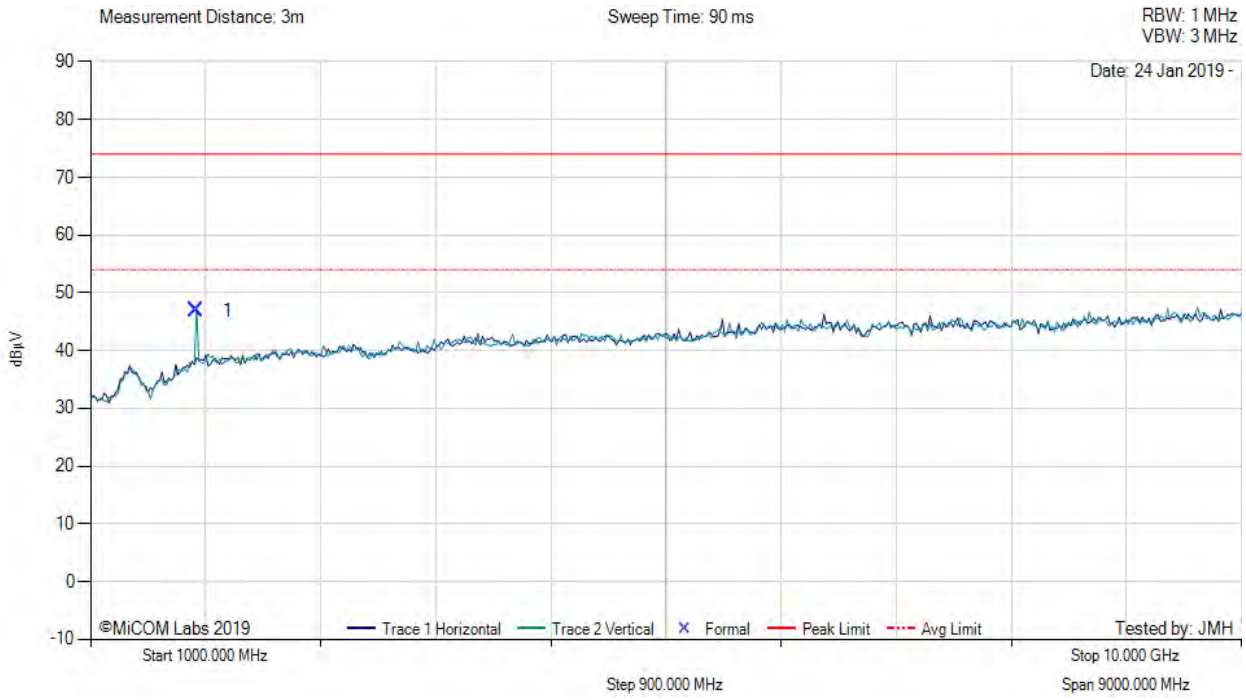
30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	874.21	44.43	6.58	-5.20	45.81	Peak (NRB)	Vertical	100	0	--	--	Pass
2	915.19	47.52	6.68	-4.80	49.40	Fundamental	Vertical	100	0	--	--	Pass
3	945.74	48.81	6.77	-4.20	51.38	Peak (NRB)	Vertical	100	0	--	--	Pass
4	960.64	42.47	6.82	-4.30	44.99	MaxQP	Vertical	98	50	53.0	-8.0	Pass

Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 3, Test Freq: 915.20 MHz, Antenna: Laird, Power Setting: 340, Duty Cycle (%): 99



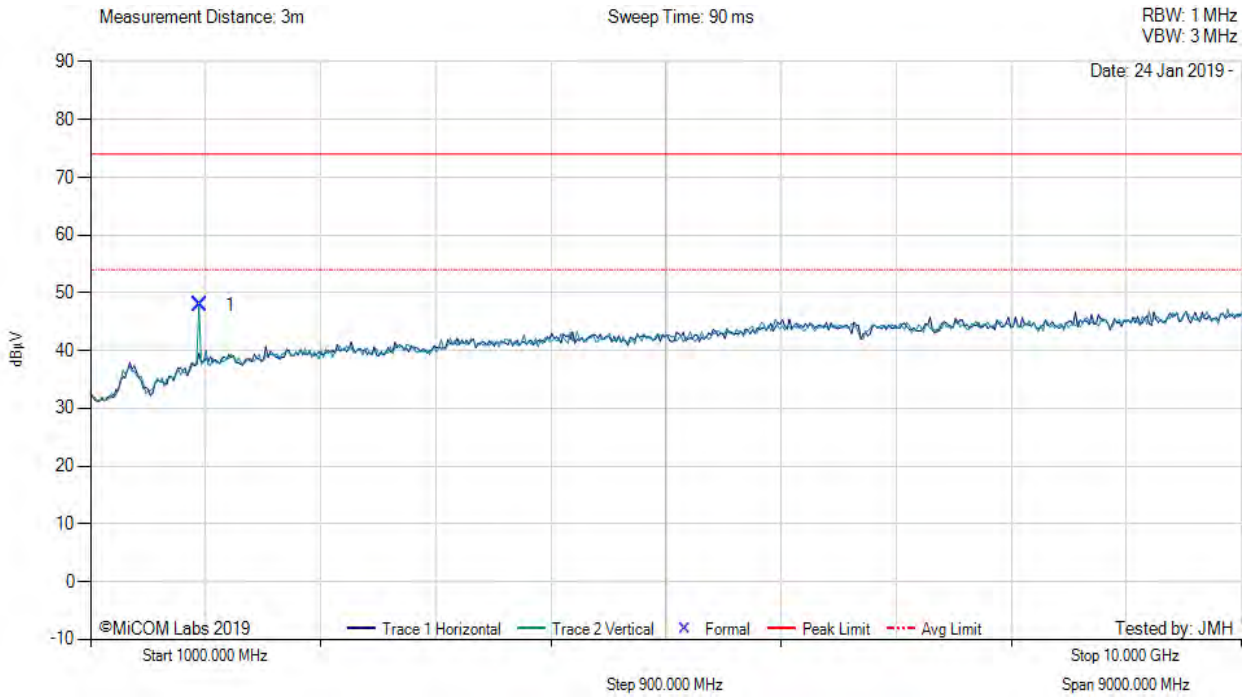
1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	1830.38	62.48	-1.52	-14.03	46.93	Peak (NRB)	Vertical	100	0	--	--	Pass

Test Notes: Laird 0600-00048 2 dBi Monopole Antenna

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 3, Test Freq: 926.80 MHz, Antenna: Laird 0600-00048, Power Setting: 340, Duty Cycle (%): 99



1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	1853.65	63.28	-1.56	-13.81	47.91	Peak (NRB)	Vertical	143	0	--	--	Pass

Test Notes: Laird 0600-00048 2 dBi Monopole Antenna

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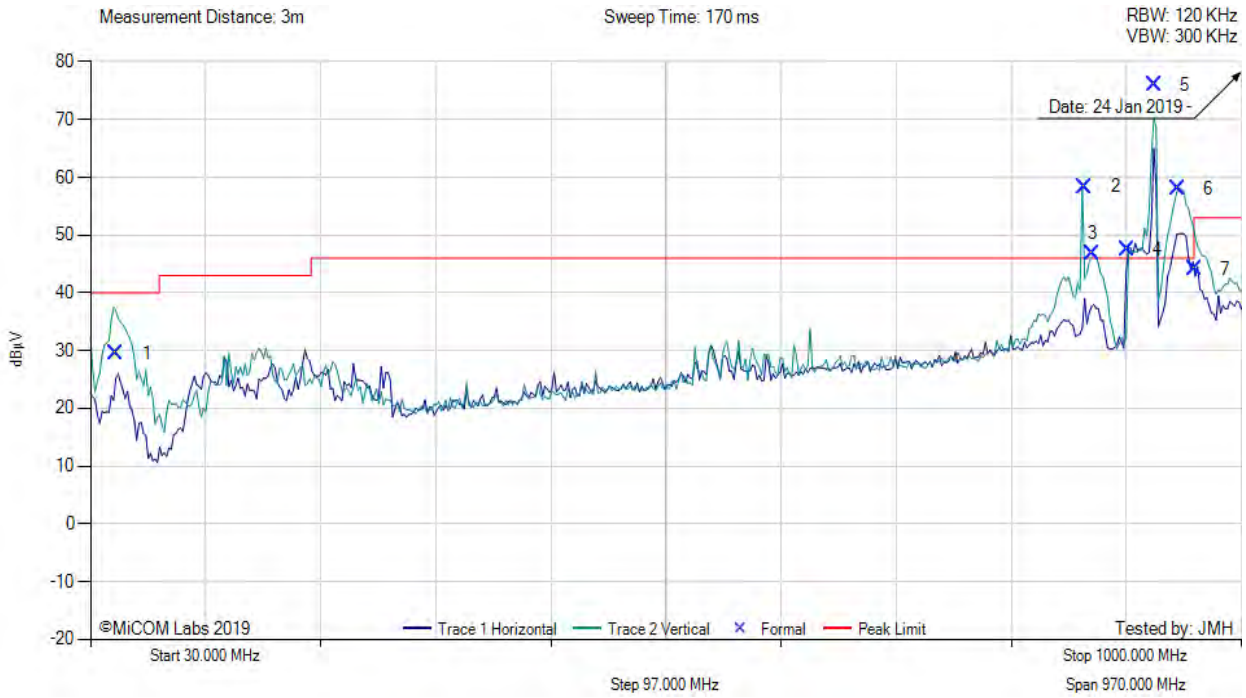
TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 3, Test Freq: Hop, Antenna: Laird 0600-00048, Power Setting: 340, Duty Cycle (%): 99



30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	51.59	46.57	3.70	-20.70	29.57	MaxQP	Vertical	175	328	40.0	-10.4	Pass
2	868.08	57.11	6.56	-5.30	58.37	Peak (NRB)	Vertical	100	0	--	--	Pass
3	874.85	45.44	6.58	-5.20	46.82	Peak (NRB)	Vertical	100	0	--	--	Pass
4	903.56	45.65	6.67	-4.90	47.42	Fundamental	Vertical	100	0	--	--	Pass
5	926.60	73.89	6.72	-4.60	76.01	Fundamental	Vertical	100	0	--	--	Pass
6	946.33	55.42	6.78	-4.20	58.00	Peak (NRB)	Vertical	100	0	--	--	Pass
7	960.44	41.57	6.82	-4.30	44.09	MaxQP	Vertical	147	301	46.0	-1.9	Pass

Test Notes: Laird 0600-00048 2 dBi Monopole Antenna. 900 MHz notch in front of amp to prevent overload, Hopping

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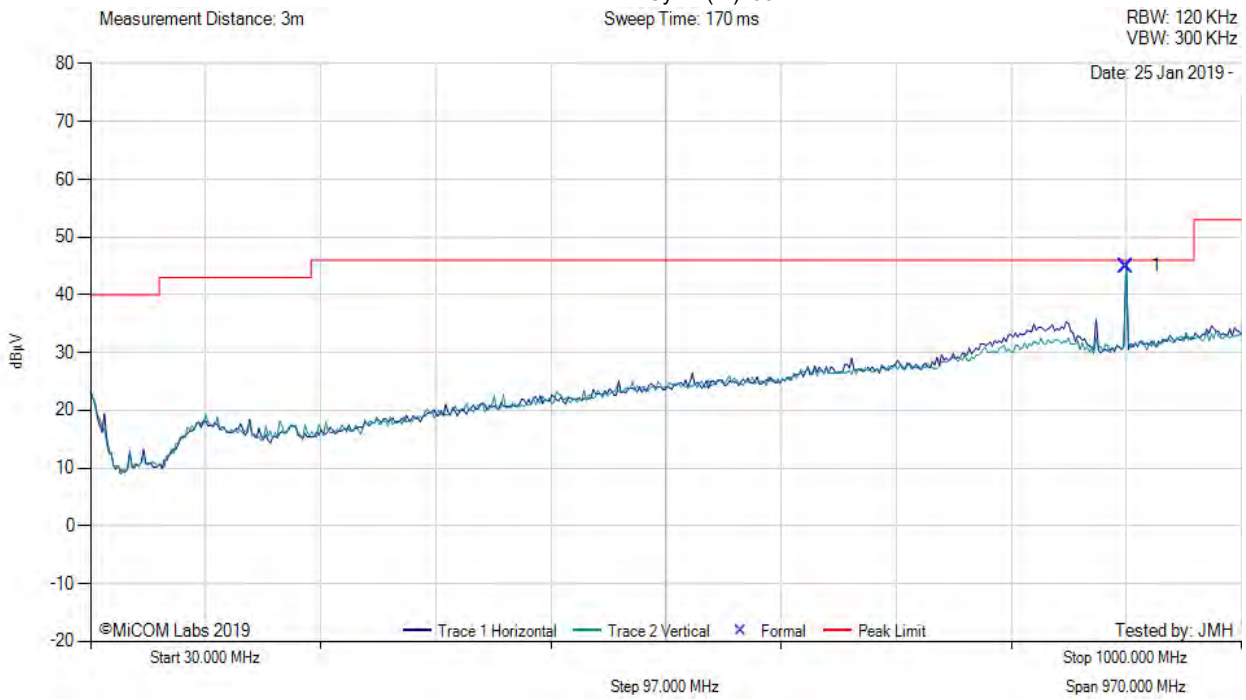
TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 1, Test Freq: 902.20 MHz, Antenna: World Products WPANT30088-S1A, Power Setting: 340, Duty Cycle (%): 99



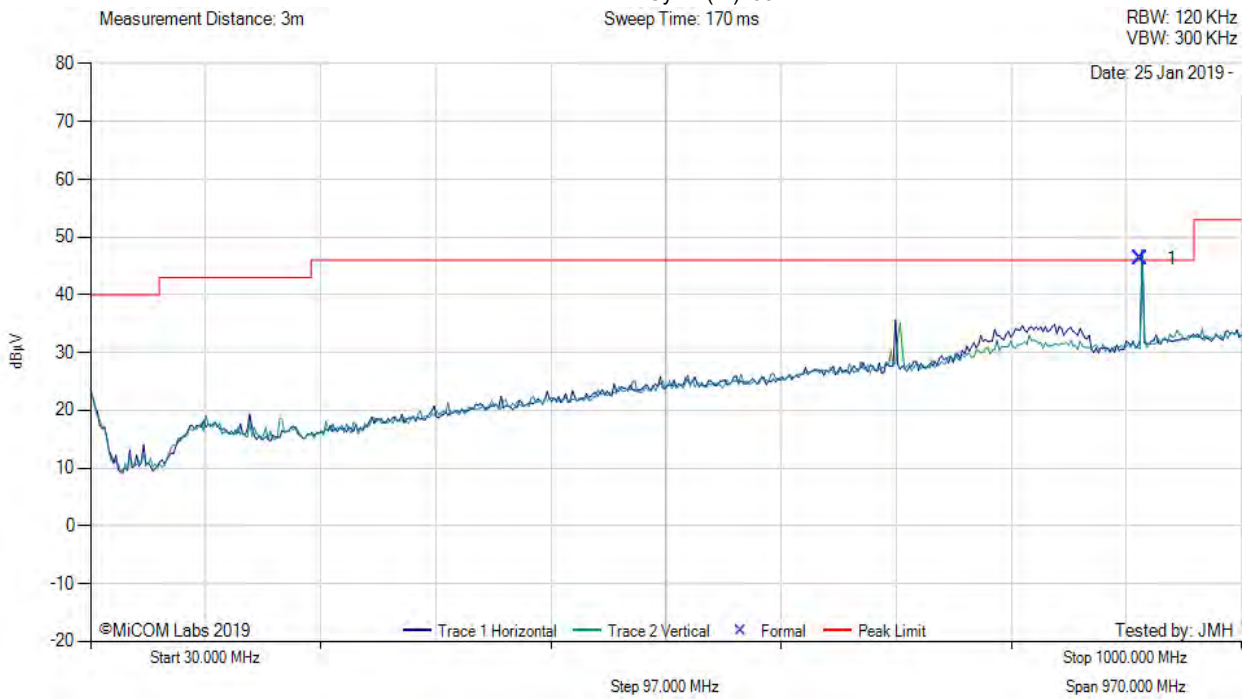
30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	902.20	43.44	6.65	-5.10	44.99	Fundamental	Horizontal	100	0	--	--	

Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 1, Test Freq: 915.20 MHz, Antenna: World Products WPANT30088-S1A, Power Setting: 340, Duty Cycle (%): 99



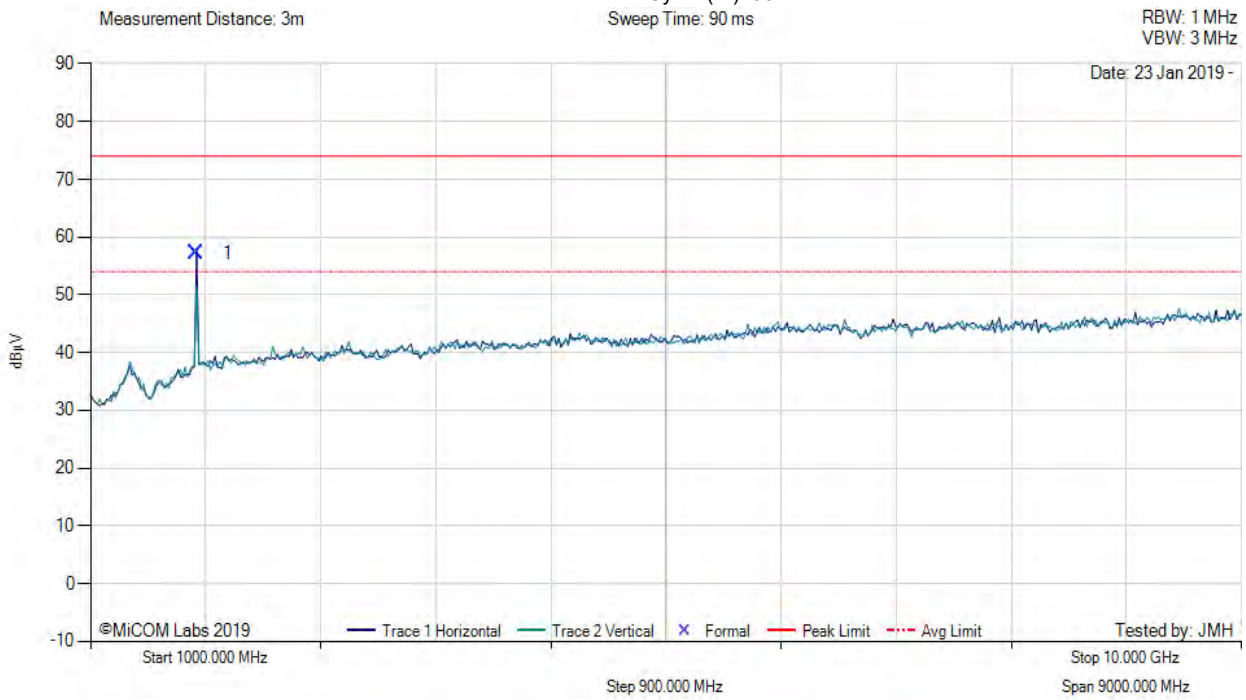
30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	915.10	44.40	6.68	-4.80	46.28	Peak (NRB)	Horizontal	100	0	--	--	Pass

Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 1, Test Freq: 915.20 MHz, Antenna: World Products WPANT30088-S1A, Power Setting: 340, Duty Cycle (%): 99

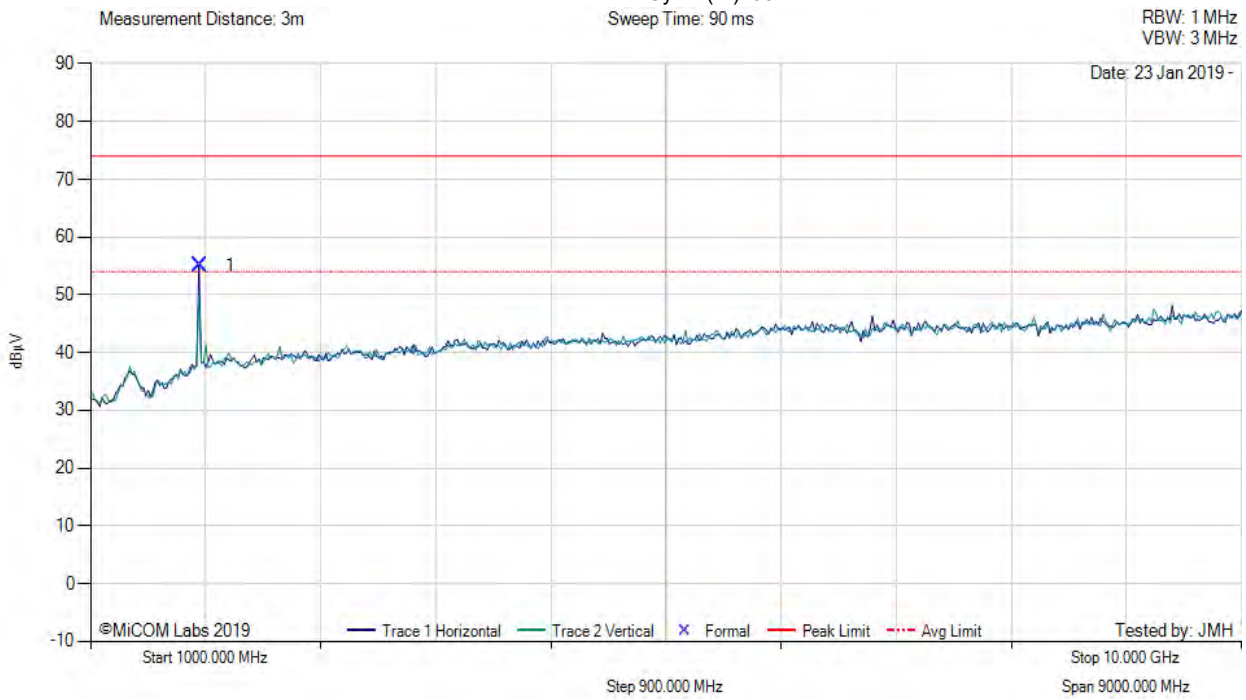


1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	1830.22	72.71	-1.52	-14.03	57.16	Peak (NRB)	Horizontal	100	0	--	--	Pass

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 1, Test Freq: 927.75 MHz, Antenna: World Products WPANT30088-S1A, Power Setting: 340, Duty Cycle (%): 99

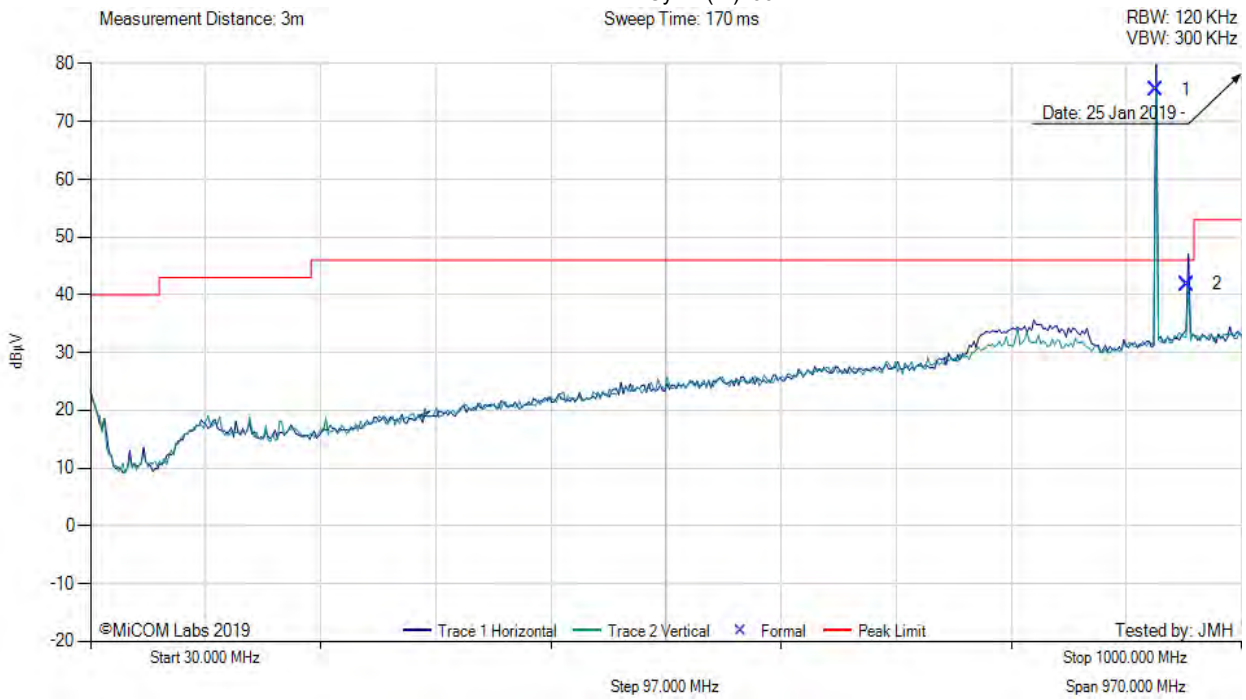


1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	1855.56	70.37	-1.56	-13.80	55.01	Peak (NRB)	Horizontal	100	0	--	--	Pass

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 1, Test Freq: 927.75 MHz, Antenna: World Products WPANT30088-S1A, Power Setting: 340, Duty Cycle (%): 99



30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	927.76	73.47	6.72	-4.70	75.49	Fundamental	Horizontal	100	0	--	--	Pass
2	953.76	39.33	6.82	-4.30	41.85	Peak (NRB)	Vertical	100	127	--	--	Pass

Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads.

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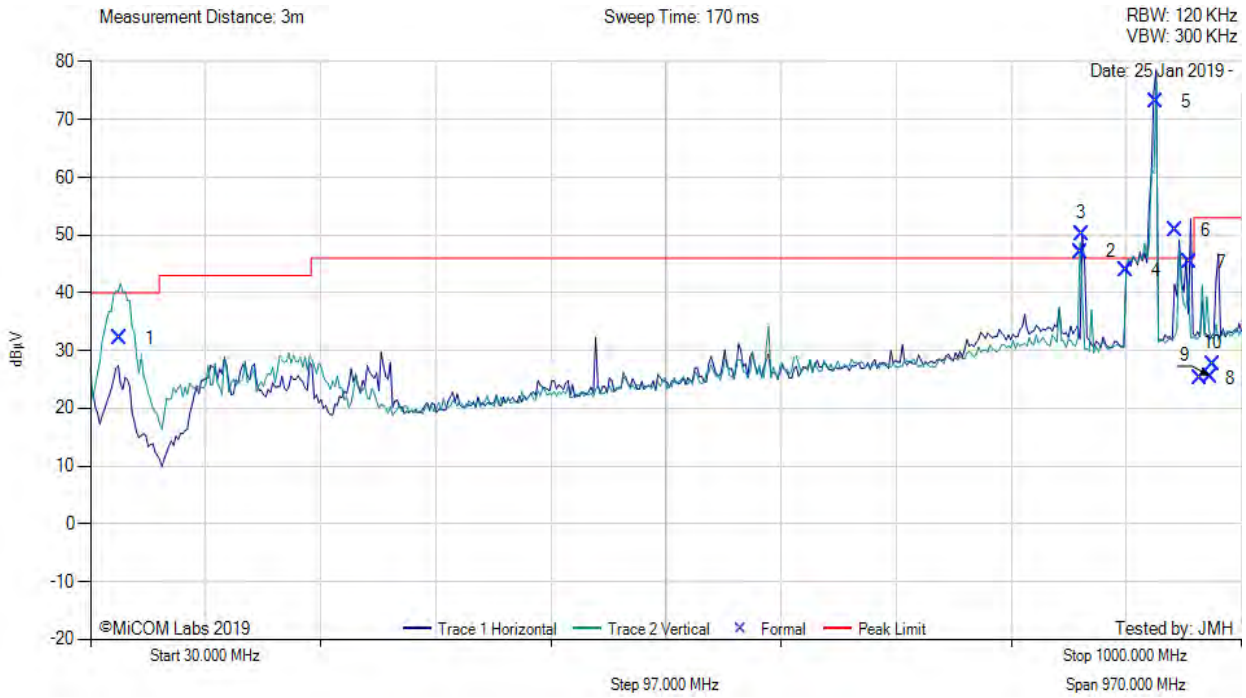
TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 1, Test Freq: Hop, Antenna: World Products WPANT30088-S1A, Power Setting: 340, Duty Cycle (%): 99



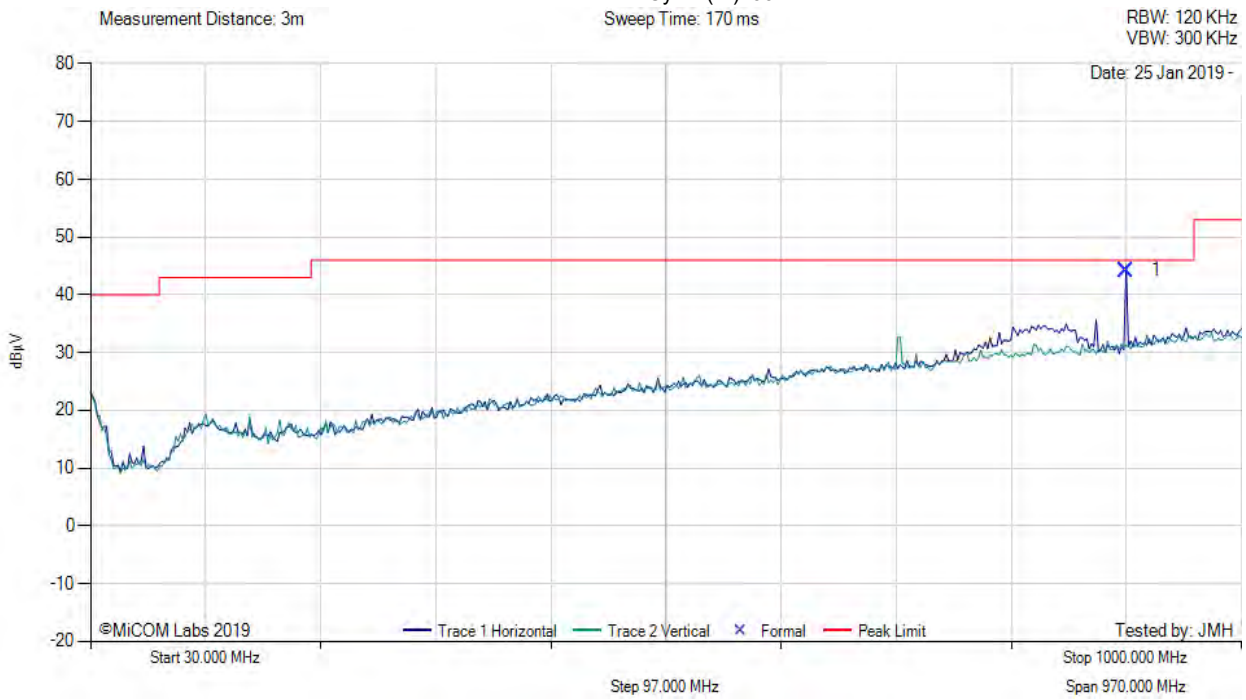
30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	54.06	49.54	3.73	-21.10	32.17	MaxQP	Vertical	101	312	40.0	-7.8	Pass
2	864.09	45.81	6.54	-5.20	47.15	Peak (NRB)	Vertical	100	0	--	--	Pass
3	865.22	48.93	6.54	-5.20	50.27	Peak (NRB)	Horizontal	100	0	--	--	Pass
4	902.26	42.31	6.65	-5.10	43.86	Fundamental	Horizontal	100	0	--	--	
5	927.51	71.10	6.72	-4.70	73.12	Fundamental	Horizontal	100	0	--	--	
6	944.37	48.26	6.77	-4.20	50.83	Peak (NRB)	Horizontal	100	0	--	--	Pass
7	956.82	42.69	6.79	-4.20	45.28	Peak (NRB)	Horizontal	100	0	--	--	Pass
8	964.79	22.60	6.82	-4.20	25.22	MaxQP	Vertical	180	308	53.0	-27.8	Pass
9	973.99	22.66	6.89	-4.00	25.55	MaxQP	Vertical	215	357	53.0	-27.5	Pass
10	976.26	24.81	6.87	-4.00	27.68	MaxQP	Horizontal	105	160	53.0	-25.3	Pass

Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads. Hopping

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 2, Test Freq: 902.20 MHz, Antenna: World Products WPANT30088-S1A, Power Setting: 340, Duty Cycle (%): 99



30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	902.31	42.68	6.65	-5.10	44.23	Fundamental	Horizontal	100	0	--	--	

Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads.

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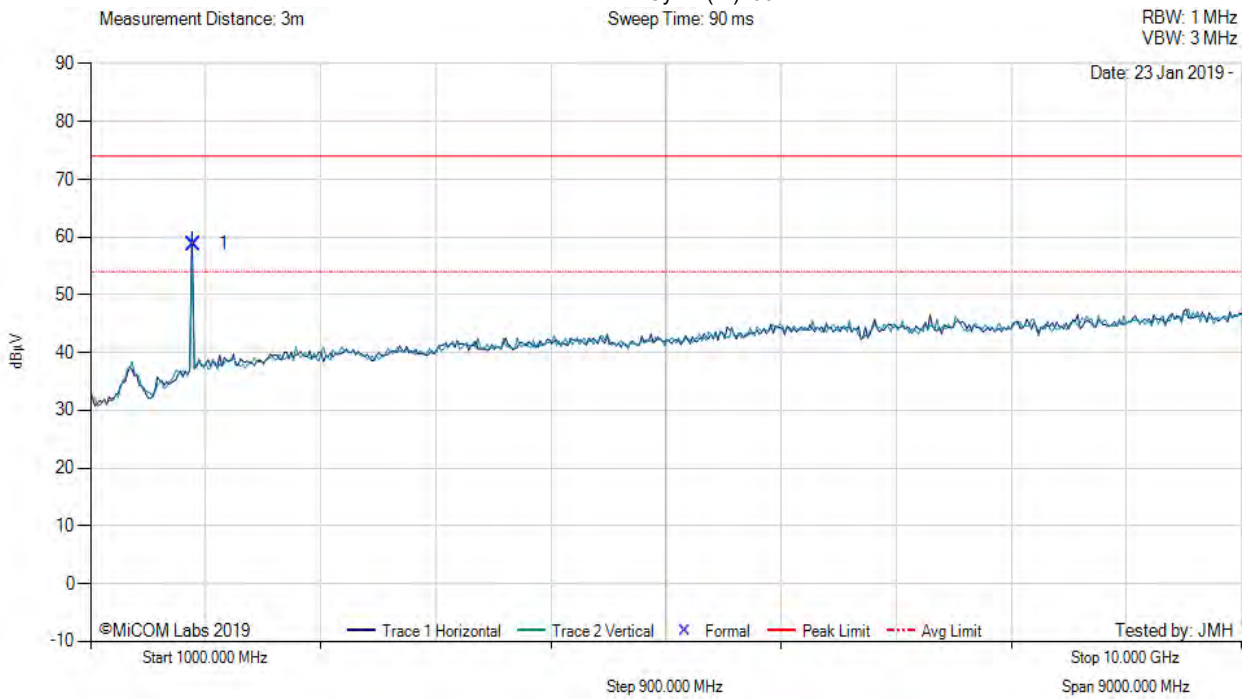
TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 2, Test Freq: 902.20 MHz, Antenna: World Products WPANT30088-S1A, Power Setting: 340, Duty Cycle (%): 99

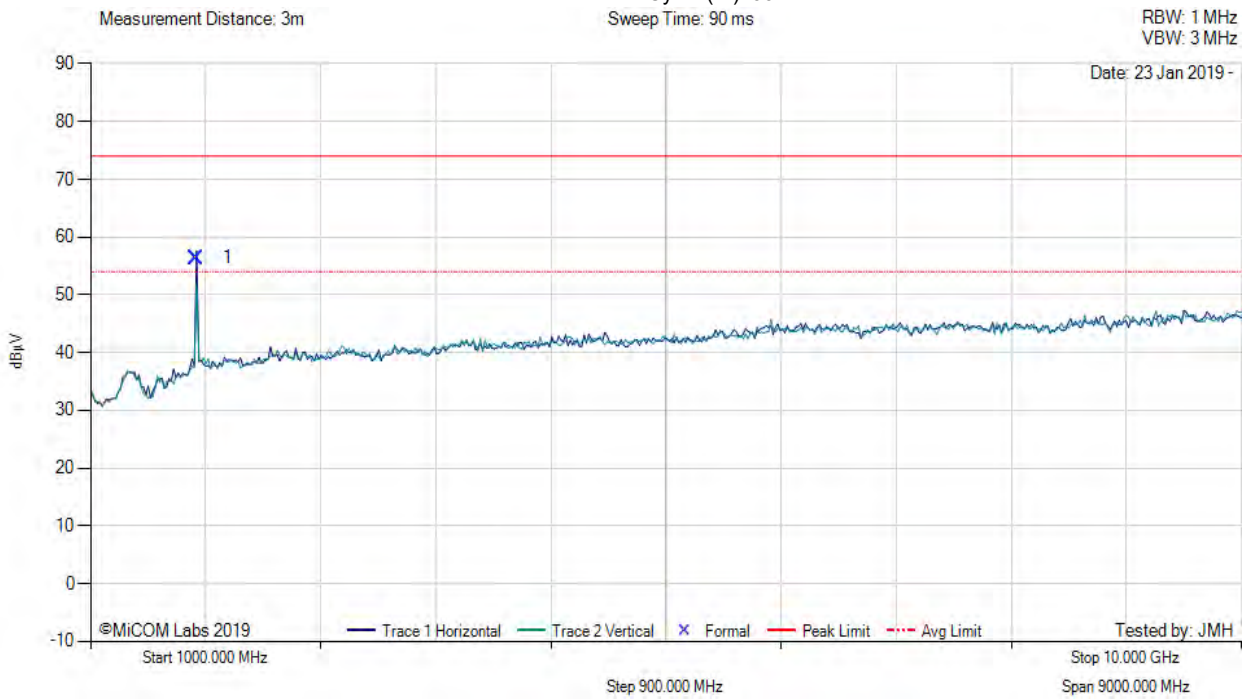


1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	1804.44	74.75	-1.55	-14.44	58.76	Peak (NRB)	Horizontal	100	0	--	--	Pass

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 2, Test Freq: 915.20 MHz, Antenna: World Products WPANT30088-S1A, Power Setting: 340, Duty Cycle (%): 99

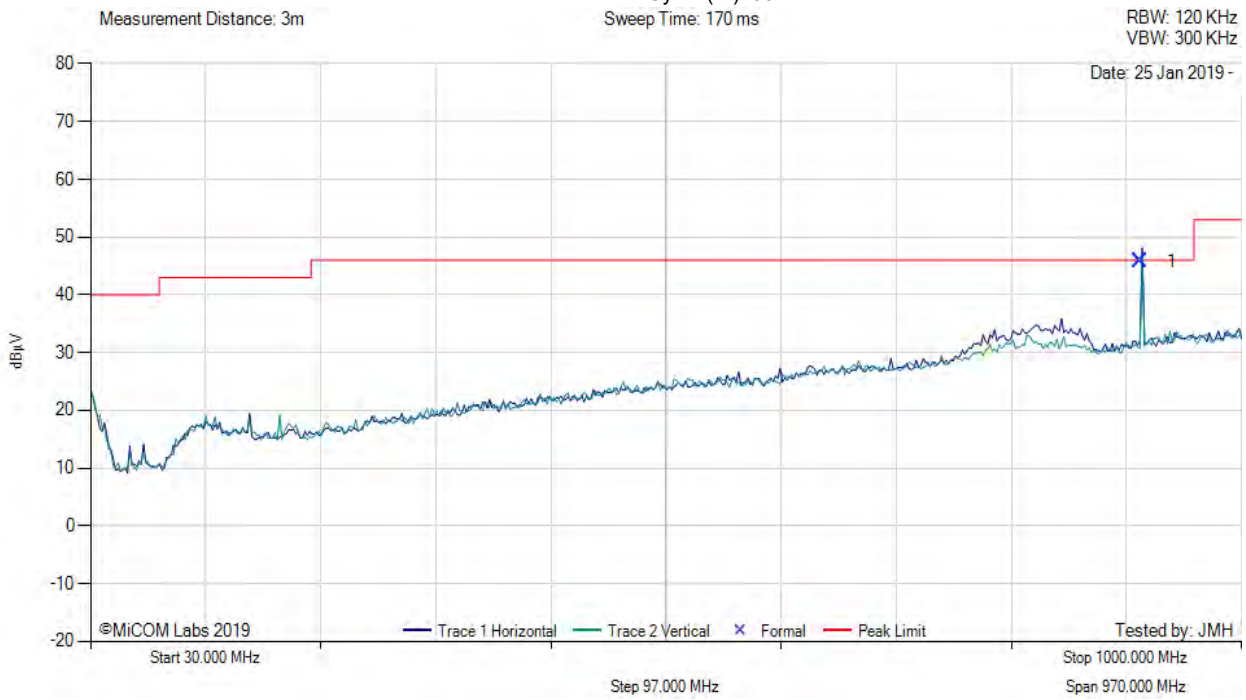


1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	1830.31	71.93	-1.52	-14.03	56.38	Peak (NRB)	Horizontal	100	0	--	--	Pass

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 2, Test Freq: 915.20 MHz, Antenna: World Products WPANT30088-S1A, Power Setting: 340, Duty Cycle (%): 99



30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	915.15	43.95	6.68	-4.80	45.83	Fundamental	Horizontal	101	0	--	--	Pass

Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads.

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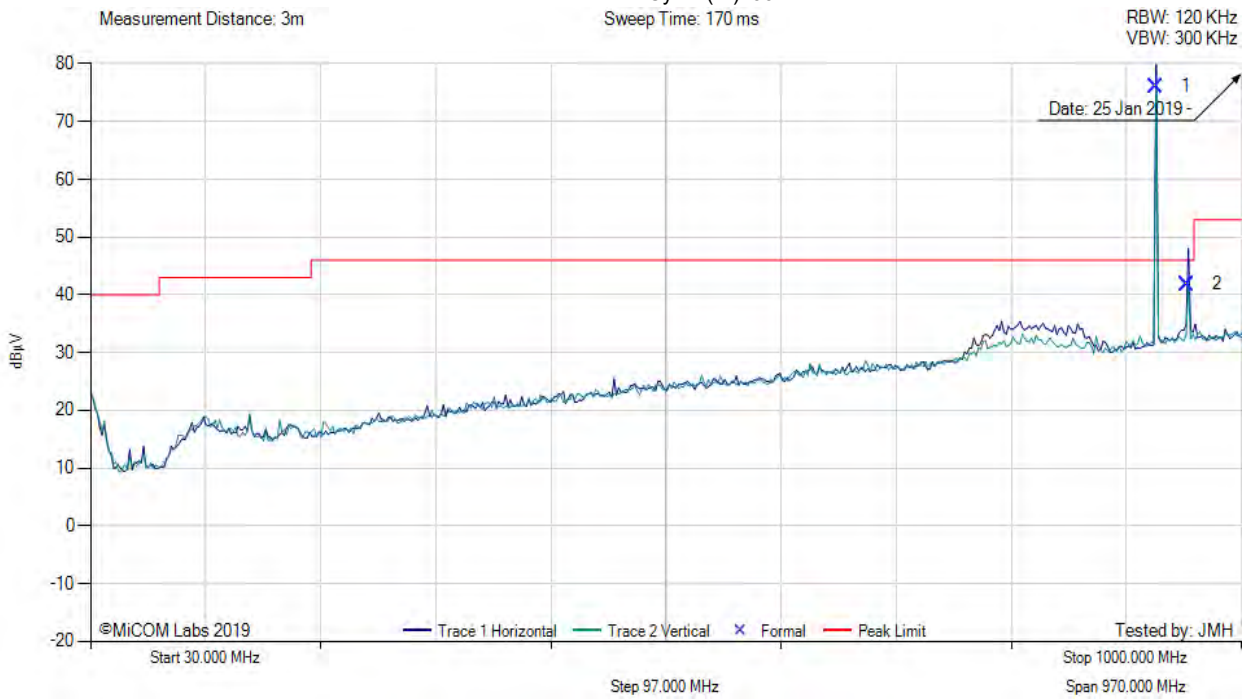
TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 2, Test Freq: 927.60 MHz, Antenna: World Products WPANT30088-S1A, Power Setting: 340, Duty Cycle (%): 99



30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	927.69	74.07	6.72	-4.70	76.09	Fundamental	Horizontal	100	0	--	--	Pass
2	953.57	39.28	6.82	-4.30	41.80	Peak (NRB)	Horizontal	100	0	--	--	Pass

Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads.

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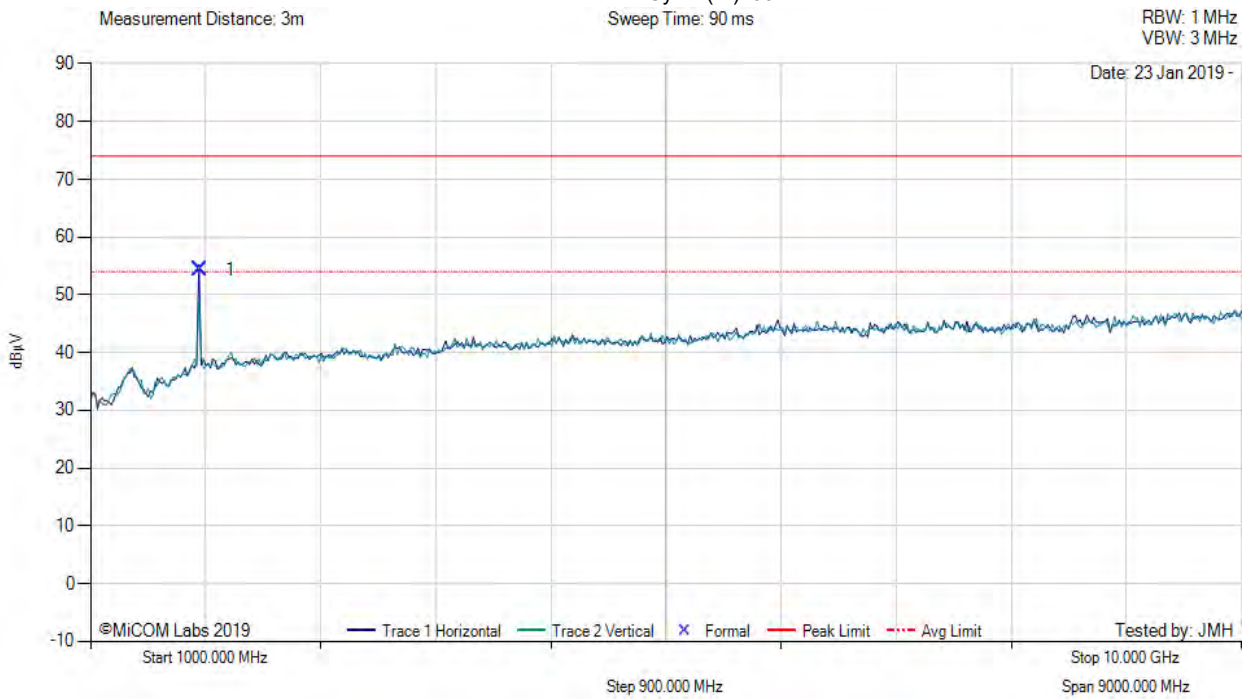
TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 2, Test Freq: 927.60 MHz, Antenna: World Products WPANT30088-S1A, Power Setting: 340, Duty Cycle (%): 99



1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	1855.11	69.73	-1.56	-13.80	54.37	Peak (NRB)	Horizontal	100	0	--	--	Pass

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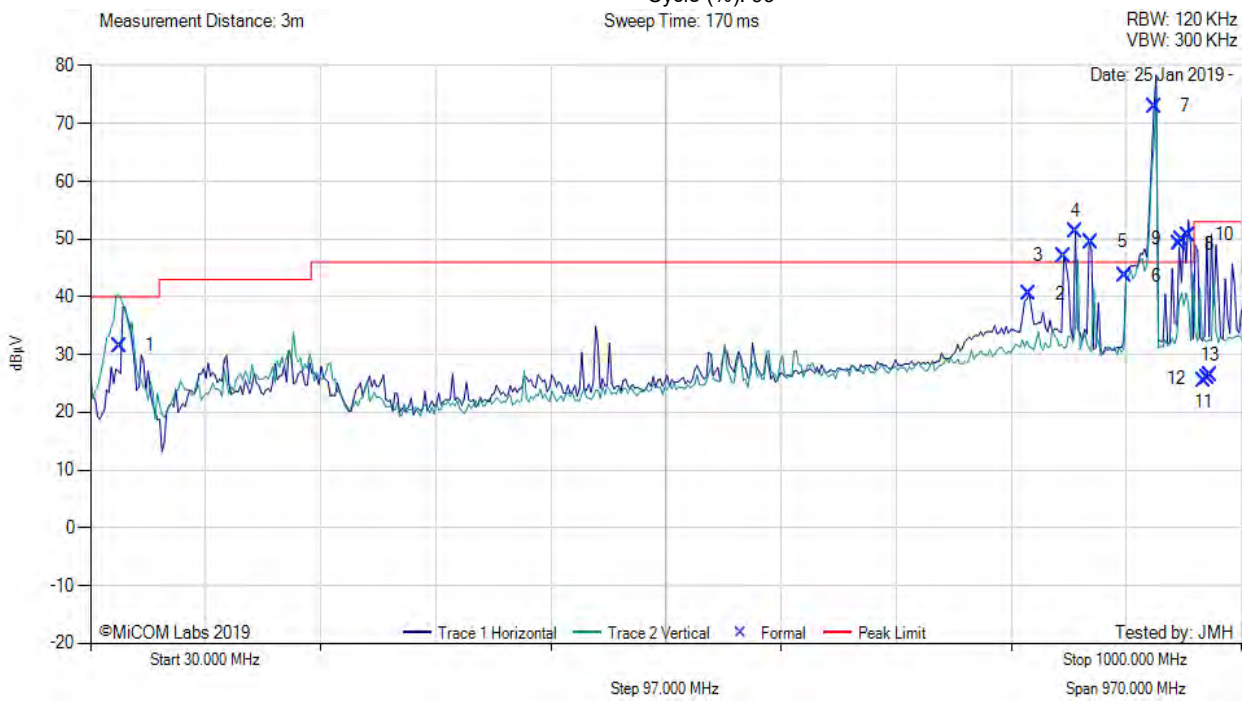
TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 2, Test Freq: 0.00 MHz, Antenna: World Products WPANT30088-S1A, Power Setting: 340, Duty Cycle (%): 99



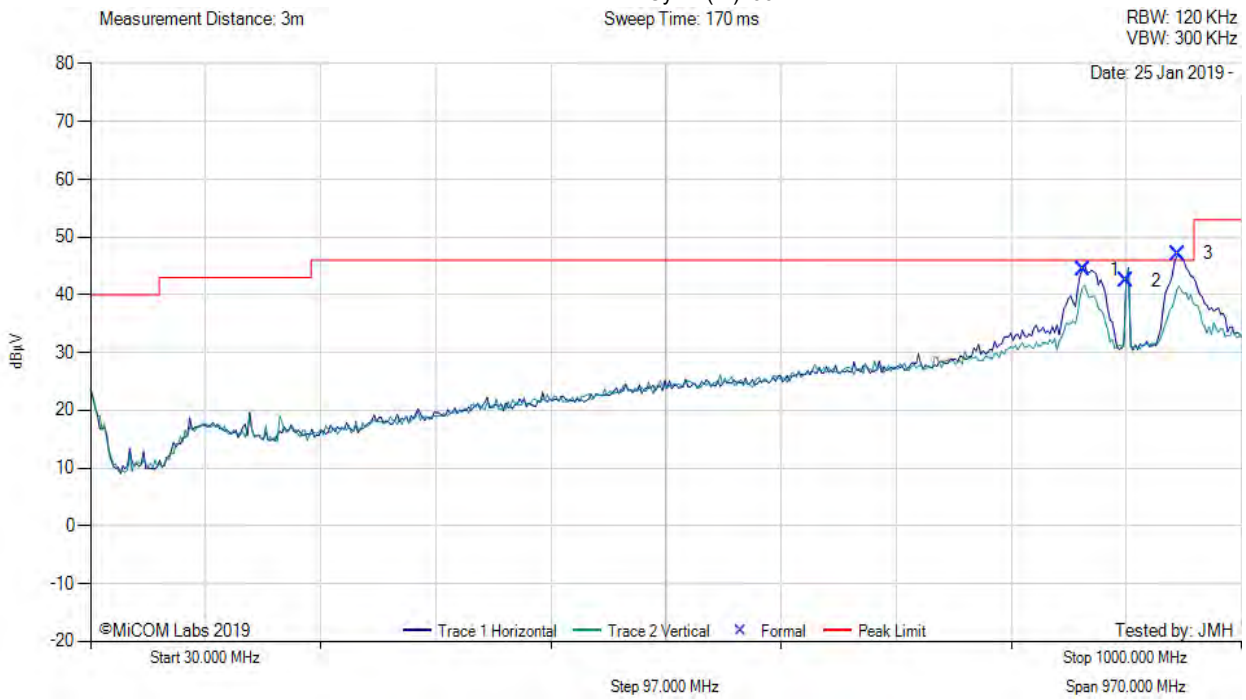
30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	54.29	48.87	3.73	-21.10	31.50	MaxQP	Vertical	125	268	40.0	-8.5	Pass
2	821.16	52.93	6.89	-5.50	40.54	Peak (NRB)	Horizontal	100	0	--	--	Pass
3	850.32	59.61	7.02	-5.50	47.09	Peak (NRB)	Horizontal	100	0	--	--	Pass
4	860.04	63.79	7.11	-5.40	51.28	Peak (NRB)	Horizontal	100	0	--	--	Pass
5	873.65	61.84	7.15	-5.30	49.48	Peak (NRB)	Horizontal	100	0	--	--	Pass
6	902.07	42.13	6.65	-5.10	43.68	Peak (NRB)	Horizontal	100	0	--	--	Pass
7	926.98	70.84	6.72	-4.60	72.96	Peak (NRB)	Horizontal	100	0	--	--	Pass
8	947.40	46.49	6.79	-4.20	49.08	Peak (NRB)	Horizontal	100	0	--	--	Pass
9	949.39	47.42	6.79	-4.20	50.01	Peak (NRB)	Horizontal	100	0	--	--	Pass
10	955.57	48.12	6.79	-4.20	50.71	Peak (NRB)	Horizontal	100	0	--	--	Pass
11	968.57	22.76	6.85	-4.20	25.41	MaxQP	Horizontal	224	66	53.0	-27.6	Pass
12	971.22	23.11	6.85	-4.00	25.96	MaxQP	Horizontal	171	149	53.0	-27.0	Pass
13	973.53	23.49	6.89	-4.00	26.38	MaxQP	Horizontal	184	144	53.0	-26.6	Pass

Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 3, Test Freq: 903.00 MHz, Antenna: World Products WPANT30088-S1A, Power Setting: 340, Duty Cycle (%): 99



30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	866.99	43.18	6.54	-5.30	44.42	Peak (NRB)	Horizontal	100	41	--	--	Pass
2	902.99	40.91	6.65	-5.10	42.46	Fundamental	Horizontal	100	0	--	--	
3	946.47	44.52	6.78	-4.20	47.10	Peak (NRB)	Horizontal	100	132	--	--	Pass

Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads.

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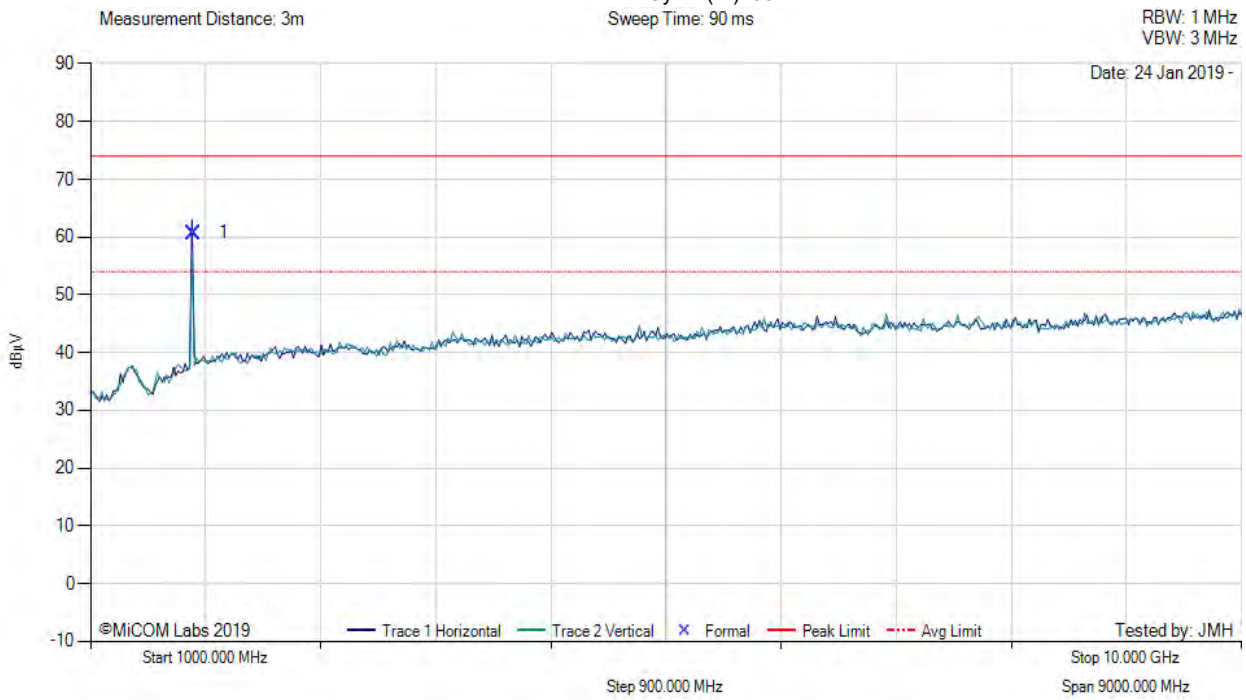
TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 3, Test Freq: 903.00 MHz, Antenna: World Products WPANT30088-S1A, Power Setting: 340, Duty Cycle (%): 99



1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	1806.04	76.69	-1.55	-14.43	60.71	Peak (NRB)	Horizontal	100	0	--	--	Pass
Test Notes: WPANT Antenna..												

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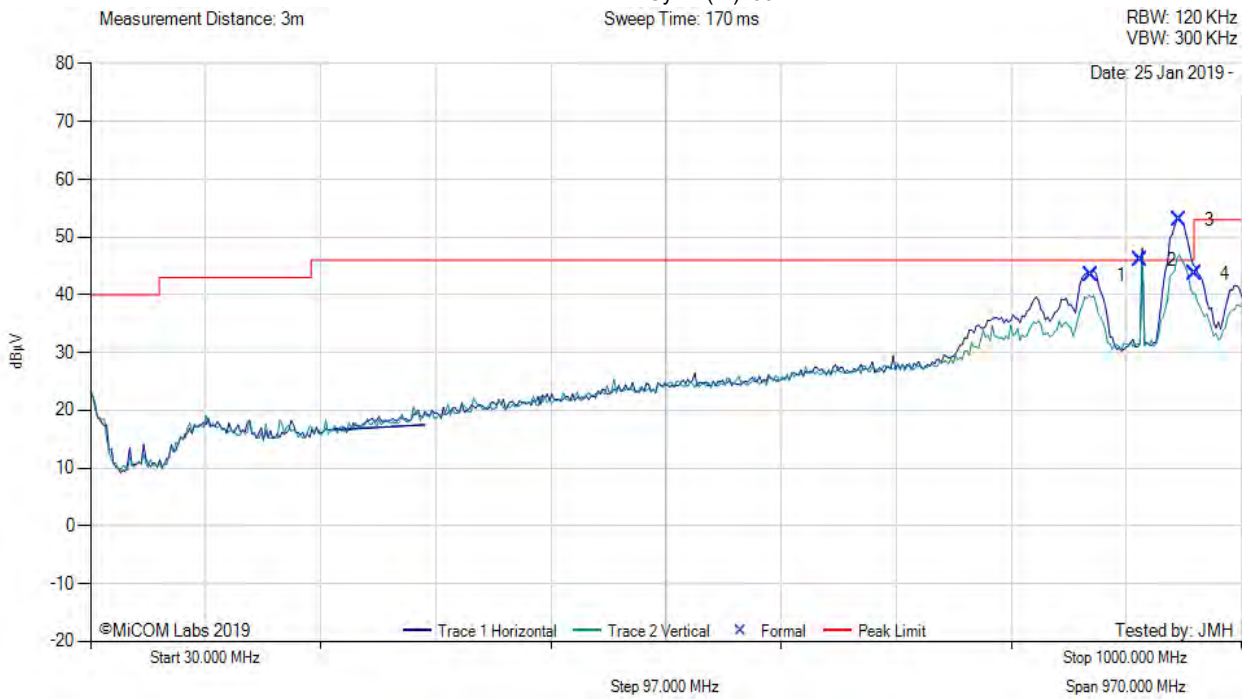
TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 3, Test Freq: 915.20 MHz, Antenna: World Products WPANT30088-S1A, Power Setting: 340, Duty Cycle (%): 99



30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	873.53	42.08	6.58	-5.30	43.36	Peak (NRB)	Horizontal	100	166	--	--	Pass
2	915.21	44.13	6.68	-4.80	46.01	Fundamental	Horizontal	100	0	--	--	Pass
3	947.52	50.38	6.79	-4.20	52.97	Peak (NRB)	Horizontal	100	166	--	--	Pass
4	960.19	41.09	6.82	-4.30	43.61	MaxQP	Horizontal	98	150	53.0	-9.4	Pass

Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads.

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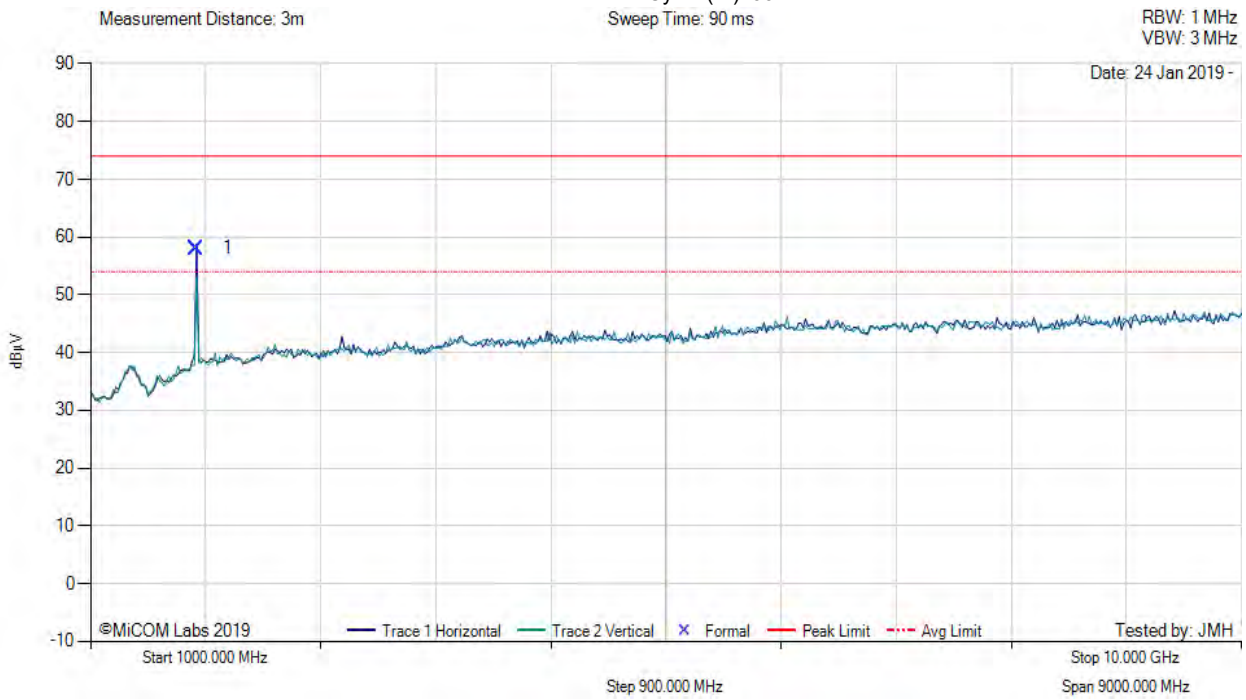
TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 3, Test Freq: 915.20 MHz, Antenna: World Products WPANT30088-S1A, Power Setting: 340, Duty Cycle (%): 99

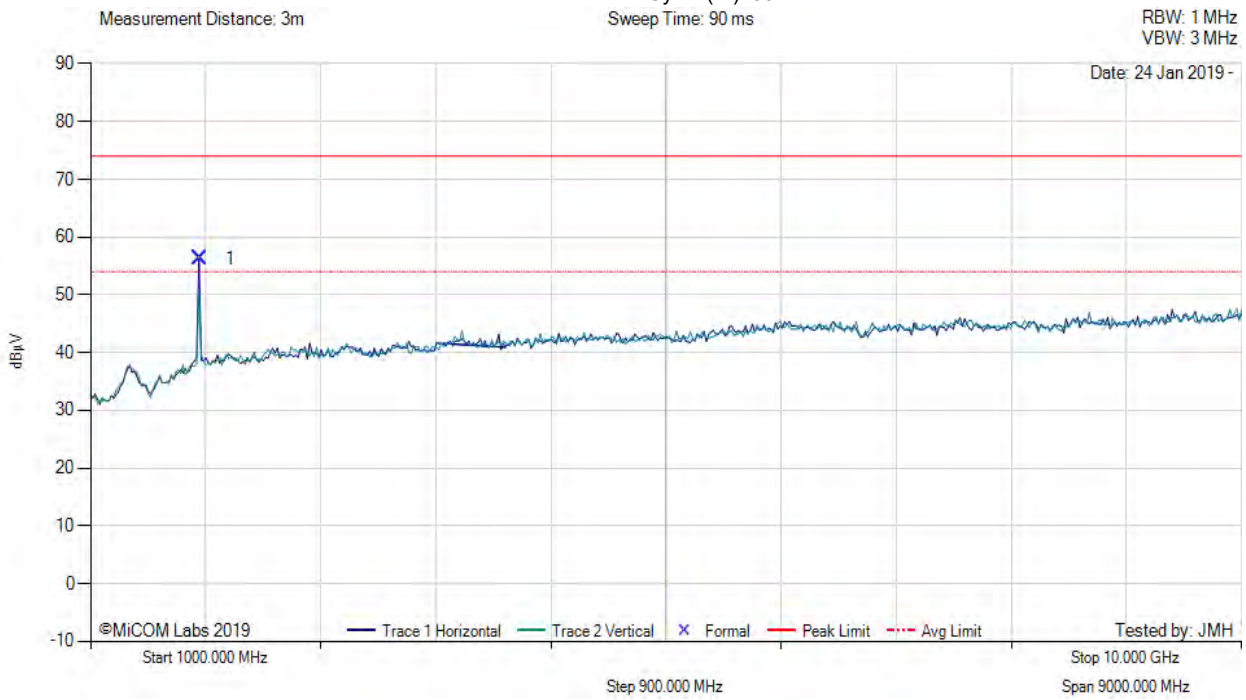


1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	1830.42	73.62	-1.52	-14.03	58.07	Peak (NRB)	Horizontal	100	0	--	--	Pass

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 3, Test Freq: 926.80 MHz, Antenna: World Products WPANT30088-S1A, Power Setting: 340, Duty Cycle (%): 99



1000.00 - 10000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	1853.63	71.71	-1.56	-13.81	56.34	Peak (NRB)	Horizontal	100	0	--	--	Pass

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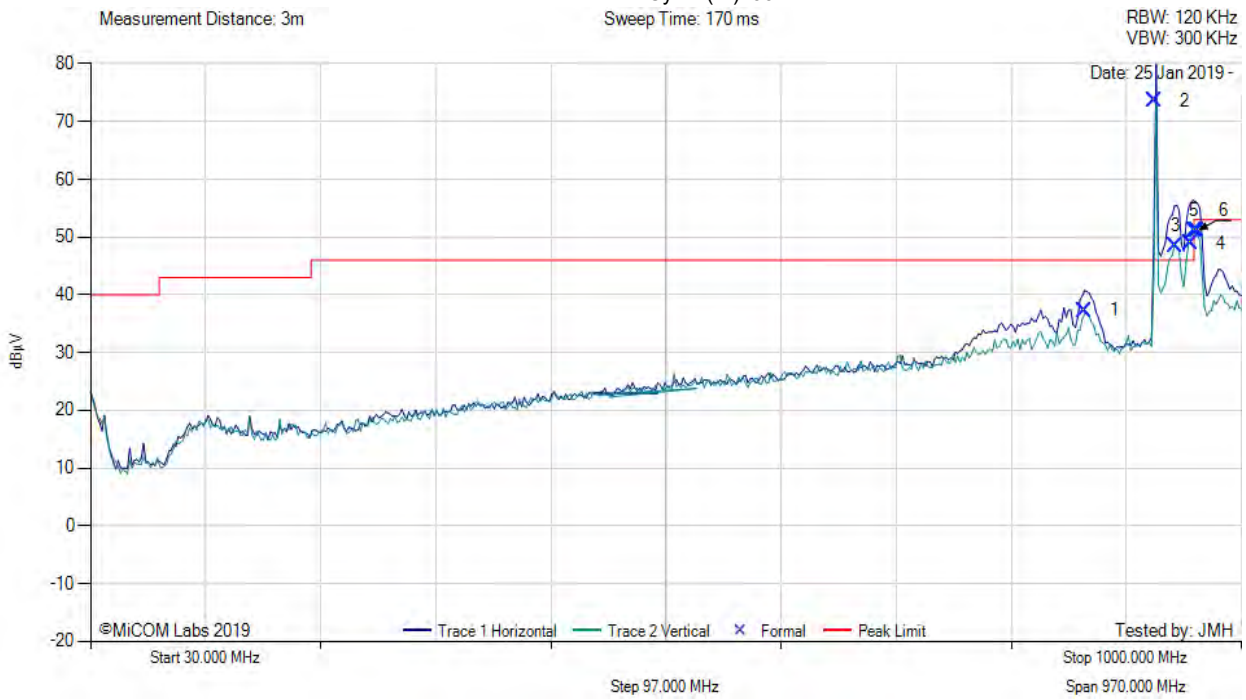
TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 3, Test Freq: 926.80 MHz, Antenna: World Products WPANT30088-S1A, Power Setting: 340, Duty Cycle (%): 99



30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	867.82	35.99	6.56	-5.30	37.25	Peak (NRB)	Horizontal	100	0	--	--	Pass
2	926.81	71.47	6.72	-4.60	73.59	Fundamental	Horizontal	100	0	--	--	Pass
3	944.78	45.79	6.77	-4.20	48.36	Peak (NRB)	Horizontal	100	0	--	--	Pass
4	957.56	46.21	6.79	-4.10	48.90	Peak (NRB)	Horizontal	100	0	--	--	Pass
5	960.21	48.50	6.82	-4.30	51.02	MaxQP	Horizontal	100	143	53.0	-3.0	Pass
6	963.07	48.50	6.81	-4.20	51.11	MaxQP	Horizontal	100	149	53.0	-1.9	Pass

Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads.

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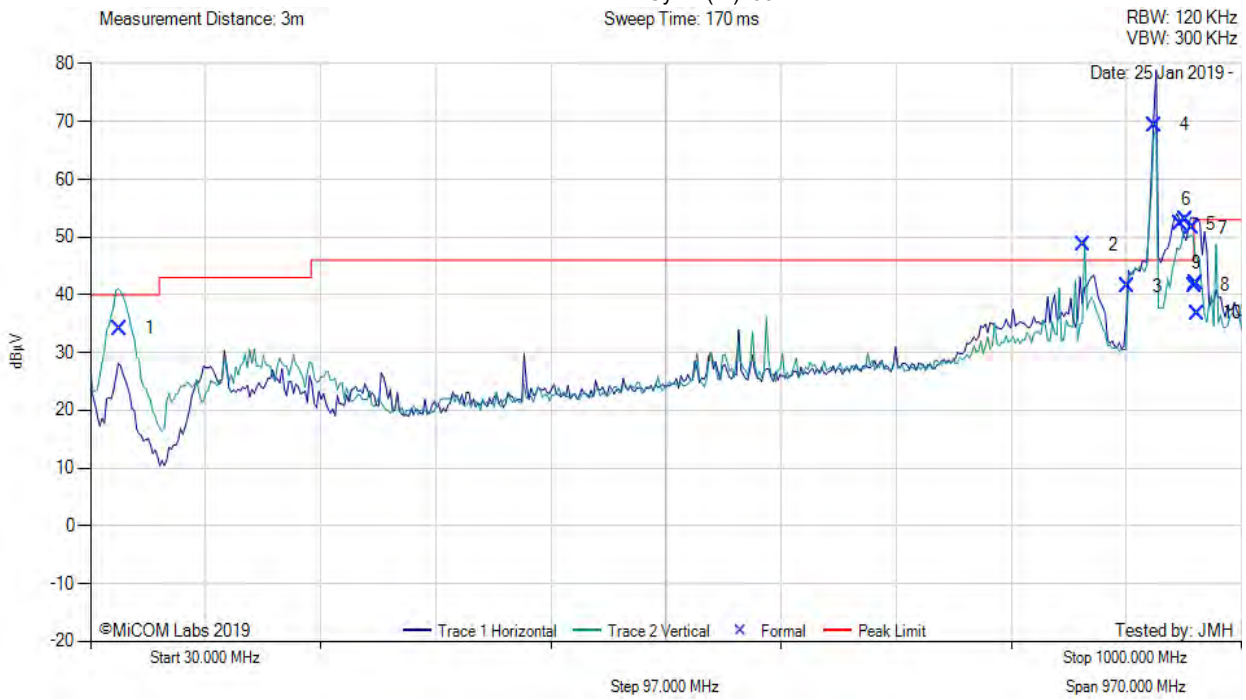
TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: Mode 3, Test Freq: Hopping MHz, Antenna: World Products WPANT30088-S1A, Power Setting: 340, Duty Cycle (%): 99



30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	54.32	51.54	3.73	-21.10	34.17	MaxQP	Vertical	100	348	40.0	-5.8	Pass
2	866.66	47.42	6.54	-5.30	48.66	Peak (NRB)	Vertical	201	360	--	--	Pass
3	903.73	39.75	6.67	-4.90	41.52	Fundamental	Horizontal	100	0	--	--	Pass
4	926.82	67.25	6.72	-4.60	69.37	Fundamental	Horizontal	100	0	--	--	Pass
5	948.41	49.72	6.79	-4.20	52.31	Peak (NRB)	Horizontal	100	166	--	--	Pass
6	953.37	50.49	6.82	-4.30	53.01	Peak (NRB)	Horizontal	100	166	--	--	Pass
7	958.77	49.07	6.80	-4.30	51.57	Peak (NRB)	Horizontal	100	166	--	--	Pass
8	960.54	39.12	6.82	-4.30	41.64	MaxQP	Horizontal	189	165	53.0	-11.4	Pass
9	961.75	39.08	6.82	-4.00	41.90	MaxQP	Horizontal	301	154	53.0	-11.1	Pass
10	962.52	34.07	6.81	-4.10	36.78	MaxQP	Horizontal	101	128	53.0	-16.2	Pass

Test Notes: WPANT Antenna.. 900 MHz notch in front of amp to prevent overloads.

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